Carrier®
HEATING & COOLING

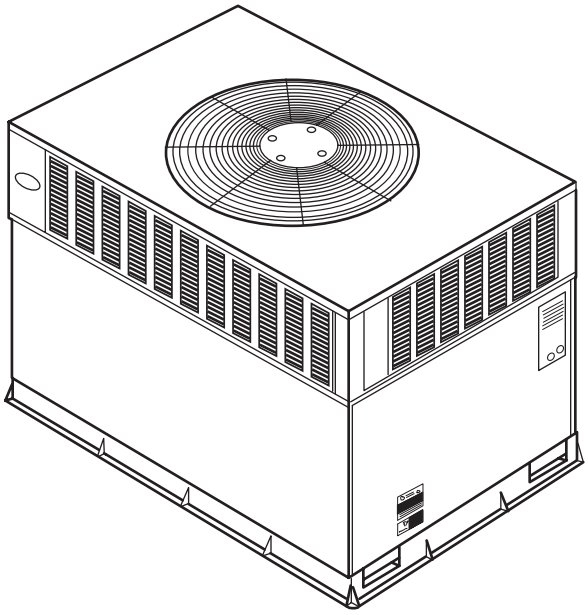
Product Data

50JZ Single-Package Heat Pump Units

with Puron® (R-410A) Refrigerant

2 to 5 Nominal Tons

Puron®
the environmentally sound refrigerant



UNIT 50JZ

Single-Package Products with Energy-Saving Features and Puron® refrigerant.
- 12 SEER
- HSPF up to 7.2
- Low Sound Levels

Features/Benefits

One-piece Heat Pump unit with optional electric heater, low installation cost, dependable performance and easy maintenance.

Efficient operation

High-efficiency design with SEERs (Seasonal Energy Efficiency Ratio) of 12.0.

Puron® Environmentally Sound Refrigerant is Carrier's unique refrigerant designed to help protect the environment. Puron is an HFC refrigerant which does not contain chlorine that can harm the ozone layer. The most important advantage of Puron refrigerant is that it has not been banned in future air conditioning systems as the traditional refrigerant R-22 has been. Puron refrigerant is in service in over 100,000 systems proving highly reliable, environmentally sound performance.

Easy Installation

Factory-assembled package is a compact, fully self-contained, heat pump unit that is pre-wired, pre-piped, and pre-charged for minimum installation expense. 50JZ units are available in a variety of standard capacity ranges with voltage options to meet residential and light commercial requirements. Units install easily on a rooftop or at ground-level.

Durable, dependable components

Compressors are designed for high efficiency. Each compressor is hermetically sealed against contamination to help promote longer life and dependable operation.

Copyright 2000 Carrier Corporation

Vibration isolation provides quiet operation. Compressors have internal high-pressure and overcurrent protection.

Convertible duct configuration

Unit is designed for easy use in either downflow or horizontal applications. Each unit is easily converted from horizontal to downflow and include horizontal duct covers.

Direct-drive multi-speed, PSC (permanent split capacitor) blower motor is standard on all 50JZ models.

Direct-drive, PSC condenser-fan motors are designed to help reduce energy consumption and provide for cooling operation down to 40°F outdoor temperature. Motormaster® II low ambient kit is available as a field-installed accessory.

Corporate thermostats include the Time Guard® II anti-short cycle protection circuitry. If a non-Carrier thermostat is used the Time Guard II field installed anti-short cycle kit is recommended.

Refrigerant system is designed to provide dependability. Liquid refrigerant filter driers are used to promote clean, unrestricted operation. Each unit leaves the factory with a full Puron® refrigerant charge. Refrigerant service connections make checking operating pressures easier.

Indoor and Outdoor coils are computer-designed for optimum heat transfer and cooling efficiency. The indoor coil is fabricated from copper tube and aluminum fins and is located inside the unit for protection against damage. The outdoor coil is internally mounted on the top tier of the unit. Copper fin coils and pre-coated fin coils are available from the factory by special order. These coils are recommended in applications where aluminum fins are likely to be damaged due to corrosion. They are ideal for seacoast applications.

High and Low Pressure Switches give added safety and reliability to the compressor.

Low sound ratings ensure a quiet indoor and outdoor environment with sound ratings as low as 72 dB. (See page 3.)

Easy to service cabinets provide easy single-panel accessibility to serviceable components during maintenance and installation. The basepan with integrated drain pan provides easy ground level installation with or without a mounting pad. Convenient handholds are provided to manipulate the unit on the jobsite. A nesting feature ensures a positive basepan to roof curb seal when the unit is roof mounted. A convenient 3/4-in. wide perimeter flange makes frame mounting on a rooftop easy.

Louvered Grille provides hail and vandalism protection for the coil.

Downflow operation is easily provided in the field to allow vertical ductwork connections. The basepan utilizes knockout style seals on the bottom openings to ensure a positive seal in the horizontal airflow mode.

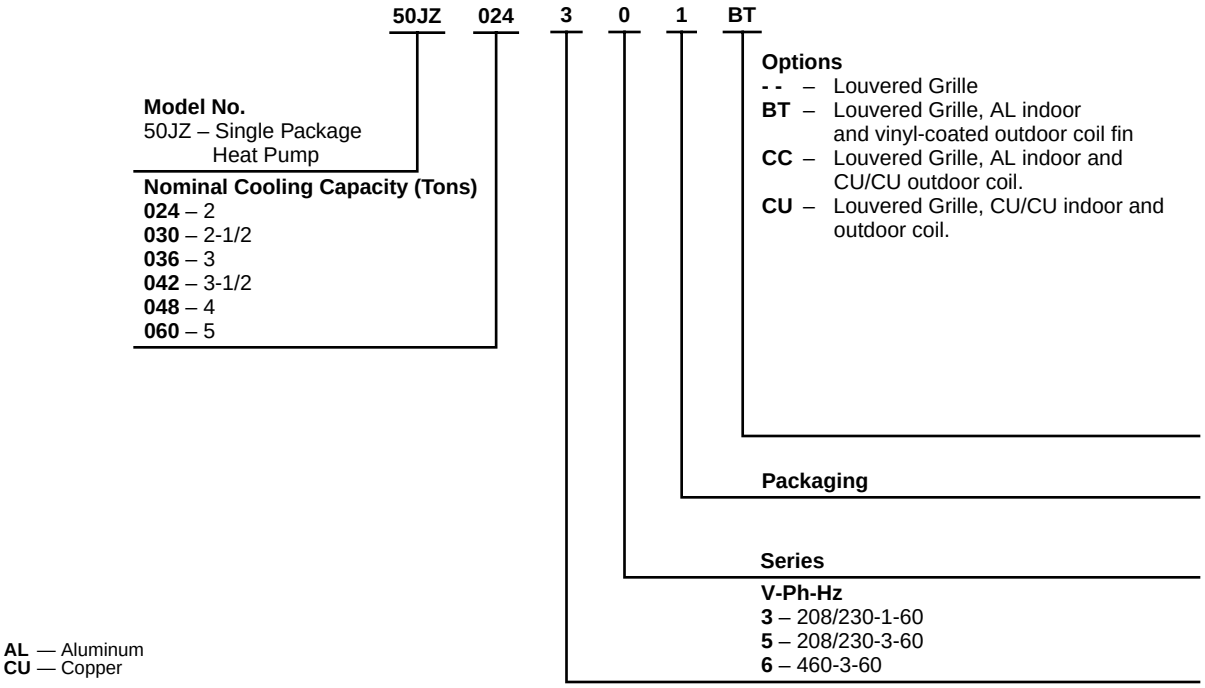
Cabinets are constructed of heavy-duty, phosphated, zinc-coated prepainted steel capable of withstanding 500 hrs of salt spray. Interior surfaces of the evaporator and electric heater compartments are insulated with cleanable semi-rigid insulation board, which keeps the conditioned air from being affected by the outdoor ambient temperature and provides improved indoor air quality. (Conforms to American Society of Heating, Refrigeration and Air Conditioning Engineers No. 62P.) The sloped drain pan minimizes standing water in the drain, which is provided with an external drain.

Standard metal duct covers with insulation come with the unit and cover the horizontal duct openings. These can be left in place if the units are converted to downshot.

Table of contents

	Page
Features/Benefits	1,2
Model Number Nomenclature	3
ARI Capacities	3
Physical Data	4
Options and Accessories	5,6
Base Unit Dimensions	7,8
Accessory Dimensions	9
Selection Procedure	10
Performance Data	11-18
Typical Piping and Wiring	19
Application Data	20
Electrical Data	21,22
Typical Wiring Schematics	23-25
Controls	26
Guide Specifications	27-28

Model number nomenclature



ARI* capacities

COOLING CAPACITIES AND EFFICIENCIES

UNIT 50JZ	NOMINAL TONS	STANDARD CFM	NET COOLING CAPACITIES (Btuh)	SEER†	SOUND RATINGS‡ (dB)
024	2	800	24,000	12.0	72
030	2-1/2	1000	29,000	12.0	72
036	3	1200	36,000	12.0	77
042	3-1/2	1400	41,000	12.0	73
048	4	1600	47,500	12.0	79
060	5	1750	58,000	12.0	79

HEATING CAPACITIES AND EFFICIENCIES

UNIT 50JZ	HIGH HEAT CAPACITY (BTUH) @ 47°F	HIGH HEAT COP @ 47°F‡	LOW HEAT CAPACITY (BTUH) @ 17°F‡	LOW HEAT COP @ 17°F‡	HSPF
024	23,800	3.0	13,000	2.0	7.0
030	28,200	3.0	15,600	2.0	7.1
036	34,400	3.0	18,000	2.0	7.2
042	40,000	3.0	22,000	2.0	7.2
048	44,000	3.0	23,600	2.0	7.2
060	55,000	3.0	31,000	2.0	7.2

LEGEND

dB — Sound Levels (decibels)
db — Dry Bulb
SEER — Seasonal Energy Efficiency Ratio
wb — Wet Bulb
COP — Coefficient of Performance
HSPF — Heating Season Performance Factor

* Air Conditioning & Refrigeration Institute.

† Rated in accordance with U.S. Government DOE (Department of Energy) test procedures and/or ARI Standard 210/240-94.

‡ Tested in accordance with ARI Standard 270-95 (not listed in ARI).

NOTES:

1. Ratings are net values, reflecting the effects of circulating fan heat. Ratings are based on:
   Cooling Standard: 80°F db, 67°F wb indoor entering-air temperature and 95°F db outdoor entering-air temperature.
2. Before purchasing this appliance, read important energy cost and efficiency information available from your retailer.

Physical data

UNIT SIZE 50JZ	024	030	036	042	048	060
NOMINAL CAPACITY (ton)	2	2-1/2	3	3-1/2	4	5
OPERATING WEIGHT (lb)	299	320	328	350	355	428
COMPRESSOR	Scroll					
REFRIGERANT (R-410A) Quantity (lb)	7.0	8.9	9.3	9.5	10.6	12.4
REFRIGERANT METERING DEVICE	AccuRater® Piston					
Orifice ID (in.)	0.061	0.061	0.067	0.073	0.076	0.088
Orifice OD (in.)	2@0.032	2@0.040	2@0.040	2@0.038	2@0.046	2@0.052
OUTDOOR COIL						
Rows—Fins/in.	2—17	2—17	2—17	2—17	2—17	2—17
Face Area (sq ft)	8.5	10.3	10.3	13.5	13.5	15.4
OUTDOOR FAN						
Nominal Cfm	2350	2350	2800	2500	3300	3300
Diameter (in.)	22	22	22	22	22	22
Motor Hp (Rpm)	1/8 (825)	1/8 (825)	1/4 (1100)	1/8 (825)	1/4 (1100)	1/4 (1100)
INDOOR COIL						
Rows—Fins/in.	3—15	3—15	4—15	3—15	4—15	4—15
Face Area (sq ft)	3.7	3.7	3.7	4.7	4.7	5.7
INDOOR BLOWER						
Nominal Airflow (Cfm)	800	1000	1200	1400	1600	1750
Size (in.)	10 x 10	10 x 10	10 x 10	11 x 10	11 x 10	11 x 10
Motor (Hp)	1/4	1/4	1/2	1/2	1/2	1.0
HIGH-PRESSURE SWITCH (psig)						
Cutout	610 ± 15					
Reset (Auto.)	420 ± 25					
LOSS-OF-CHARGE/LOW-PRESSURE SWITCH (Liquid Line) (psig)						
Cutout	20 ± 5					
Reset (Auto.)	45 ± 10					
RETURN-AIR FILTERS (in.)*						
Throwaway	20 x 20 x 1	20 x 20 x 1	20 x 24 x 1	24 x 30 x 1	24 x 30 x 1	24 x 30 x 1

* Required filter sizes shown are based on the larger of the ARI (Air Conditioning & Refrigeration Institute) rated cooling airflow or the heating airflow velocity of 300 ft/minute for throwaway type or 450 ft/minute for high-capacity type. Air filter pressure drop for non-standard filters must not exceed 0.08 in. wg.

Carrier Corporation UL REGISTERED FIRM ISO 9001 #A2325

MANUFACTURER CERTIFIED TO ARI AS COMPLYING WITH ARI STANDARD 210

OUTDOOR SOUND: OCTAVE BAND DATA—DECIBELS (L w(A))

MODEL NO.	50JZ					
Frequency (Hz)	024	030	036	042	048	060
63	44.4	43.9	53.6	47.7	57.1	54.6
125	57.5	55.9	63.6	60.4	63.9	64.1
250	61.1	60.9	66.6	64.0	70.4	68.6
500	68.0	66.9	71.1	67.5	72.7	71.2
1000	68.4	67.2	73.2	68.9	73.7	73.9
2000	64.5	63.8	69.6	64.9	71.1	69.8
4000	59.0	62.4	65.9	62.0	66.7	68.1
8000	51.7	52.1	58.4	55.0	59.7	61.8

Options and accessories

Factory-installed options

Coil options include copper/copper and vinyl-coated construction for refrigerant coils. Units are shipped standard with copper tube/aluminum fin construction. See model number nomenclature for coil options.

Field-installed accessories

Economizer with Solid-State Controls and Barometric Relief Dampers
Manual Air Damper (25% open)
Electric Heaters
Filter Rack
Flat Roof Curbs (8-in. and 14-in.)
Square-to-Round Duct Transition Kit
Thermostats
Crankcase Heater
Low Ambient Kit (Motormaster® II Control)
Solid-State Time Guard® II Device
Lifting Kit
Compressor Hard Start Kit

Economizer with solid-state controls and barometric relief dampers includes filter racks and provide outdoor air during cooling and reduce compressor operation.

Manual outside air damper includes hood and filter rack with adjustable damper blade for up to 25% outdoor air.

Electric heaters provide additional heat in the unit when required. Each package has a heater module that slides into the controls compartment. Heater sizes range from 5.0 to 20.0 kw. The electric heater design allows the use of a single-point power supply for the entire unit, resulting in lower installed costs.

Flat roof curbs in both 8 in. and 14 in. sizes are available for roof mounted applications.

Square-to-round duct transition kit enables 024-048 size units to be fitted to 14 in. round ductwork.

Thermostats provide control for the system heating and cooling functions. Thermostat models are available in both programmable and non-programmable versions.

Lifting kit includes 4 metal brackets that fit into the hand-holds, a support strap and two safety straps, is available to assist in lifting this product onto a roof application.

Crankcase heater provides anti-floodback protection for low-load cooling applications.

Low-ambient kit (Motormaster II control) allows the use of mechanical cooling down to outdoor temperatures as low as 0°F.

Solid-state Time Guard II device provides short-cycling protection for the compressor. Not required with corporate electronic thermostats.

Filter rack features easy installation, serviceability, and high-filtering performance for vertical applications.

Compressor Hard start kit gives a boost to the compressor motor at each start-up.

ELECTRIC HEATERS

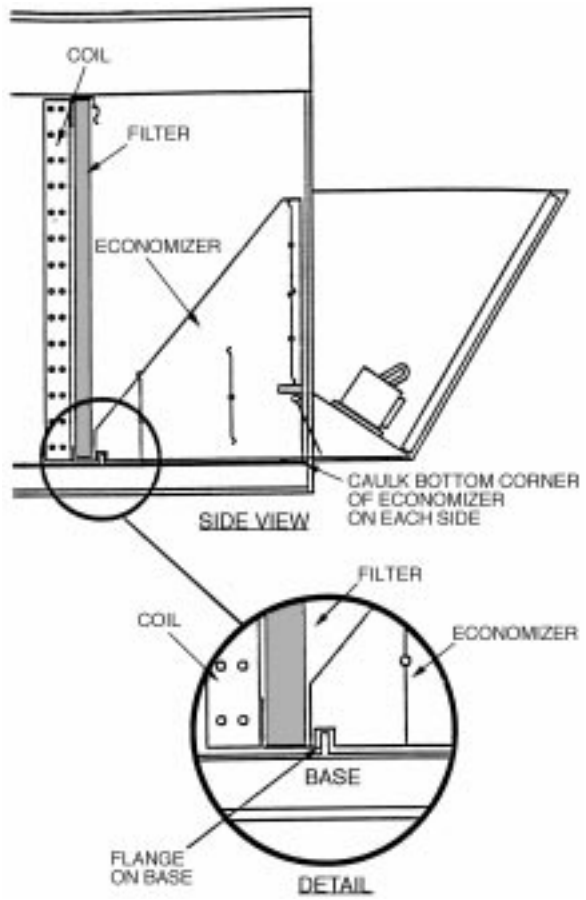
ODS CATALOG ORDERING NO.	NOMINAL CAPACITY (kW)	USED WITH SIZES					
		024	030	036	042	048	060
ELECTRIC HEATERS (208/230 — SINGLE PHASE — 60 Hz)							
CPHEATER052A00	5.0	X	X	X	X	X	X
CPHEATER050A00	10.0	X	X	X	X	X	X
CPHEATER066A00	15.0		X	X	X	X	X
CPHEATER054A00	20.0				X	X	X
ELECTRIC HEATERS (208/230 — 3 PHASE — 60 Hz)							
CPHEATER055A00	5.0		X	X	X	X	X
CPHEATER056A00	10.0		X	X	X	X	X
CPHEATER058A00	15.0		X	X	X	X	X
CPHEATER067A00	20.0				X	X	X
ELECTRIC HEATERS (460 V — 3 PHASE — 60 Hz)							
CPHEATER060A00	5.0			X	X	X	X
CPHEATER061A00	10.0			X	X	X	X
CPHEATER062A00	15.0			X	X	X	X
CPHEATER063A00	20.0				X	X	X

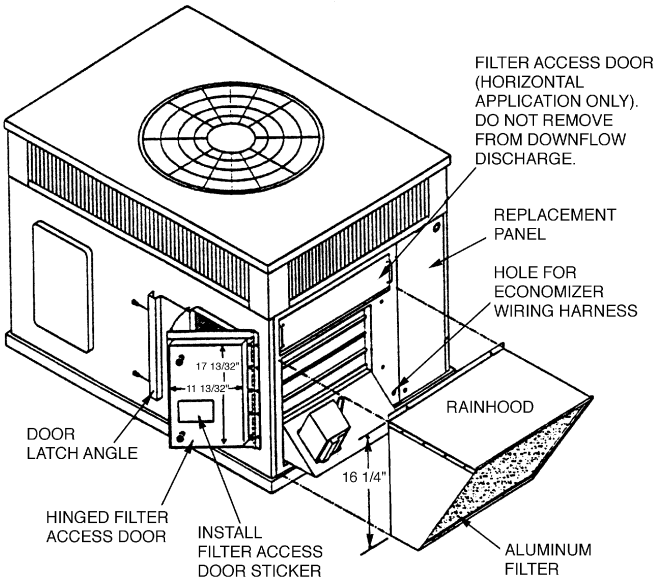
LEGEND
ODS — Order Distribution System
NOTE: Electric heaters are rated at 240v and 480v. Refer to Multiplication Factors table for other voltages.

MINIMUM AIRFLOW FOR RELIABLE ELECTRIC HEATER OPERATION

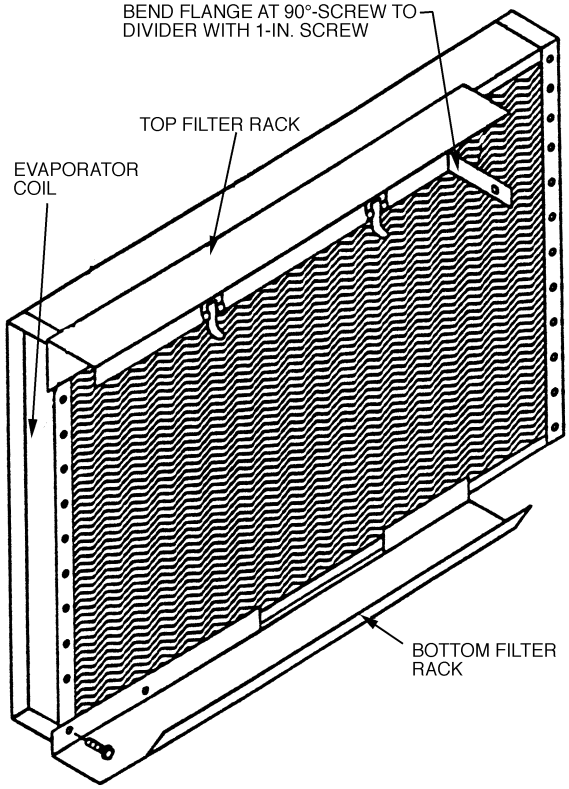
UNIT-50JZ	024	030	036	042	048	060
AIRFLOW	800	1000	1200	1400	1600	2000

ECONOMIZER

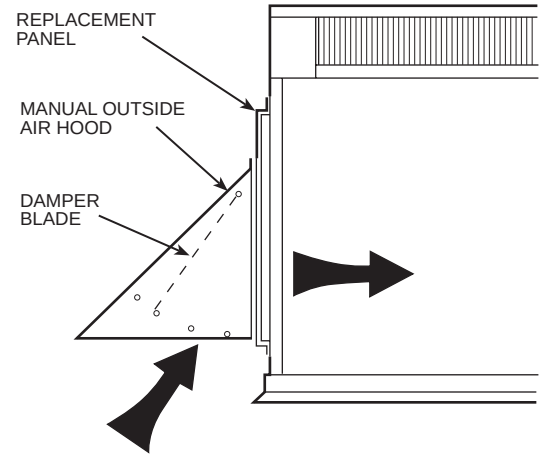




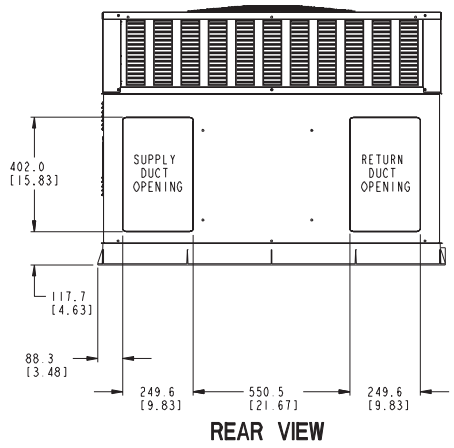
FILTER RACK



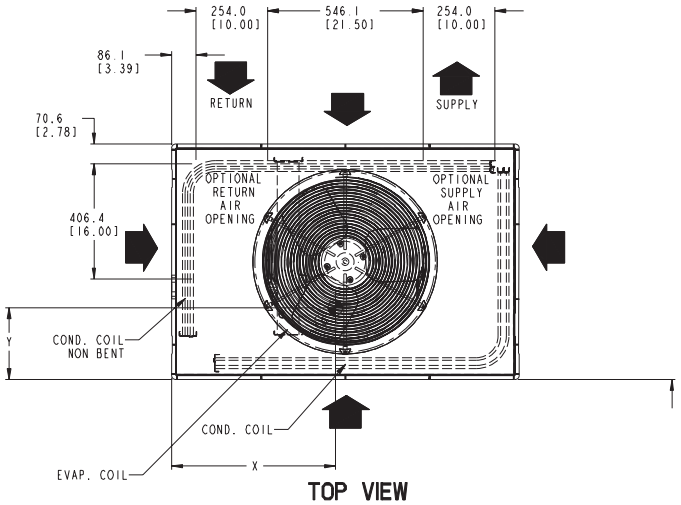
MANUAL OUTSIDE AIR DAMPER



Base unit dimensions—50JZ024-036



REAR VIEW



TOP VIEW

REQ'D CLEARANCES FOR OPERATION AND SERVICING. IN.(MM)

EVAPORATOR COIL ACCESS SIDE	36 (914)
POWER ENTRY SIDE (EXCEPT FOR NEC REQUIREMENTS)	36 (914)
UNIT TOP	48 (1219)
SIDE OPPOSITE DUCTS	36 (914)
DUCT PANEL	12 (304.8)*

*MINIMUM DISTANCES: IF UNIT IS PLACED LESS THAN 12 IN. (304.8 MM) FROM WALL SYSTEM, THEN THE SYSTEM PERFORMANCE MAY BE COMPROMISED.

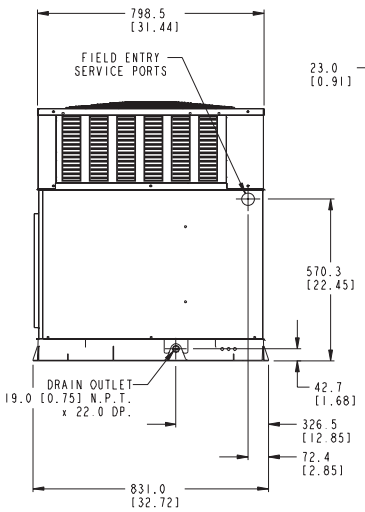
REQ'D CLEARANCES TO COMBUSTIBLE MAT'L. IN.(MM)

TOP OF UNIT	14 (355.6)
DUCT SIDE OF UNIT	2 (50.8)
SIDE OPPOSITE DUCTS	14 (355.6)
BOTTOM OF UNIT	0.50 (12.7)
ELECTRIC HEAT PANEL	36 (914.4)

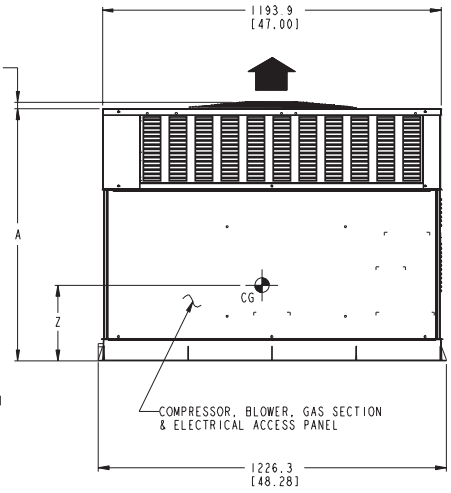
NEC REQ'D CLEARANCES. IN.(MM)

BETWEEN UNITS, POWER ENTRY SIDE	42 (1066.8)
UNIT AND UNGROUNDED SURFACES, POWER ENTRY SIDE	36 (914)
UNIT AND BLOCK OF CONCRETE WALLS AND OTHER GROUNDED SURFACES, CONTROL BOX SIDE	42 (1066.8)

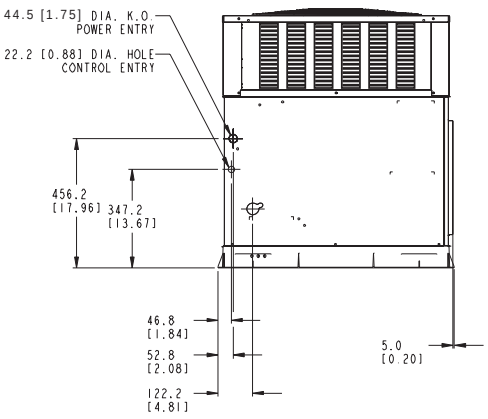
LEGEND
CG - CENTER OF GRAVITY
COND - CONDENSER
EVAP - EVAPORATOR
NEC - NATIONAL ELECTRICAL CODE
REQ'D - REQUIRED
NOTE: DIMENSIONS ARE IN IN. (MM)



LEFT SIDE VIEW



FRONT VIEW

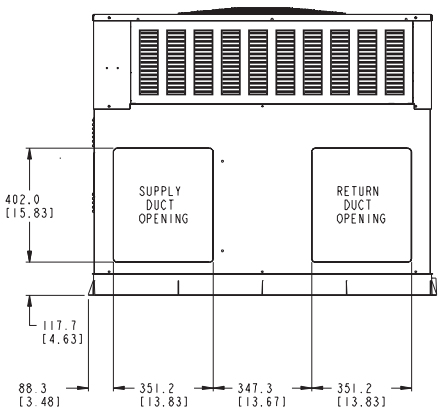


RIGHT SIDE VIEW

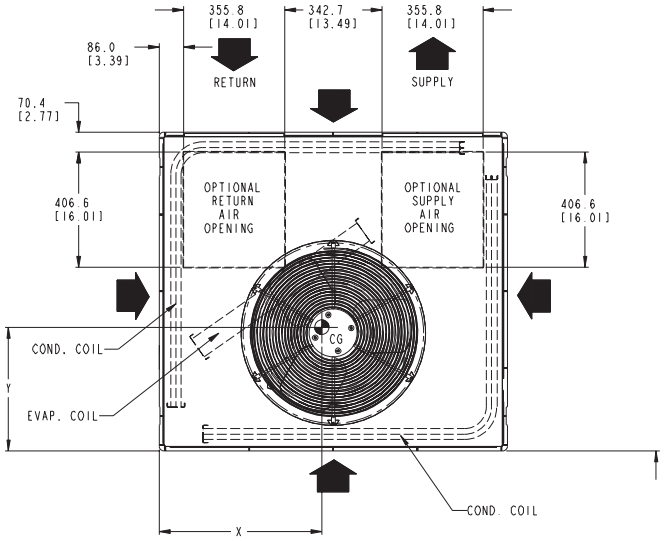
UNIT	ELECTRICAL CHARACTERISTICS	UNIT WEIGHT		UNIT HEIGHT in. [mm] "A"	CENTER OF GRAVITY in. [mm]		
		lb	kg		X	Y	Z
50JZ024	208/230-1-60	299	135.6	35.02 [889.5]	19.0 [482.6]	18.3 [463.6]	16.0 [406.4]
50JZ030	208/230-1-60, 208/230-3-60	320	145.2	37.02 [940.3]	20.0 [508.0]	19.3 [489.0]	17.6 [447.0]
50JZ036	208/230-1-60, 208/230-3-60, 460-3-60	328	148.8	37.02 [940.3]	20.0 [508]	19.0 [482.6]	16.5 [419.1]

50JZ 024-036 Dimensions

Base unit dimensions—50JZ042-060



REAR VIEW



TOP VIEW

REQUIRED CLEARANCE FOR OPERATION AND SERVICING

	in. [mm]
EVAP. COIL ACCESS SIDE	36.00 [914.0]
POWER ENTRY SIDE	36.00 [914.0]
(EXCEPT FOR NEC REQUIREMENTS)	
UNIT TOP	48.00 [1219.0]
SIDE OPPOSITE DUCTS	36.00 [914.0]
DUCT PANEL	12.00 [304.8] *

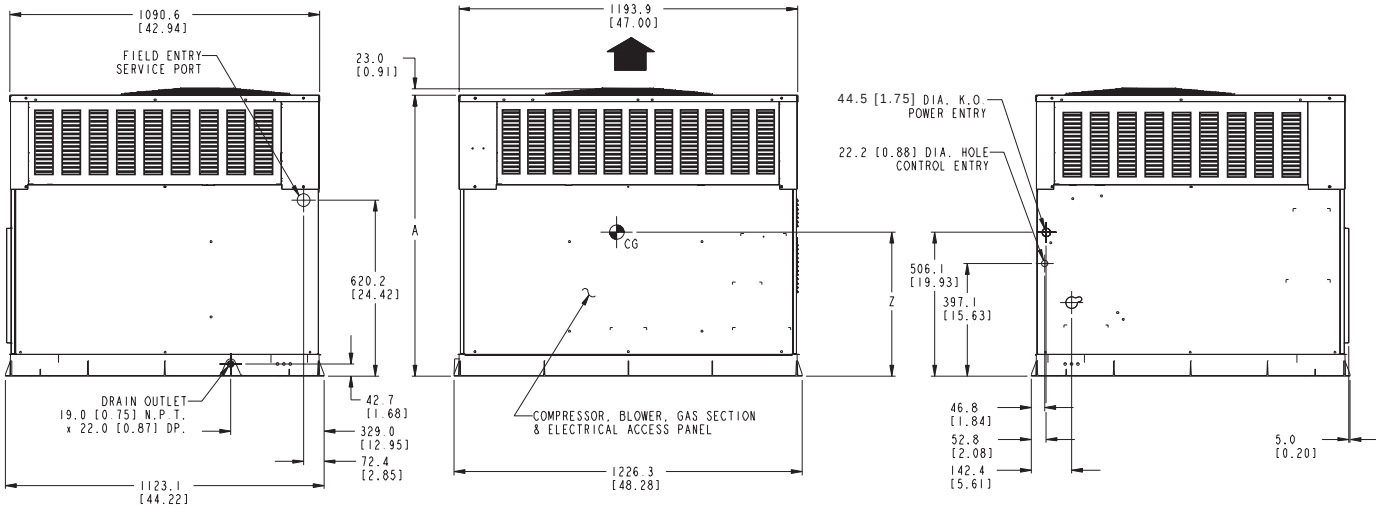
*MINIMUM DISTANCES: IF UNIT IS PLACED LESS THAN 12.00 [304.8] FROM WALL SYSTEM, THEN SYSTEM PERFORMANCE MAYBE COMPROMISE.

REQUIRED CLEARANCE TO COMBUSTIBLE MATL.

	in. [mm]
TOP OF UNIT	14.00 [355.6]
DUCT SIDE OF UNIT	2.00 [50.8]
SIDE OPPOSITE DUCTS	14.00 [355.6]
BOTTOM OF UNIT	0.50 [12.7]
ELECTRIC HEAT PANEL	36.00 [914.4]

NEC. REQUIRED CLEARANCES.

	in. [mm]
BETWEEN UNITS, POWER ENTRY SIDE	42.00 [1066.8]
UNIT AND UNGROUNDED SURFACES, POWER ENTRY SIDE	36.00 [914.0]
UNIT AND BLOCK OR CONCRETE WALLS AND OTHER GROUNDED SURFACES, POWER ENTRY SIDE	42.00 [1066.8]



LEFT SIDE VIEW FRONT VIEW RIGHT SIDE VIEW

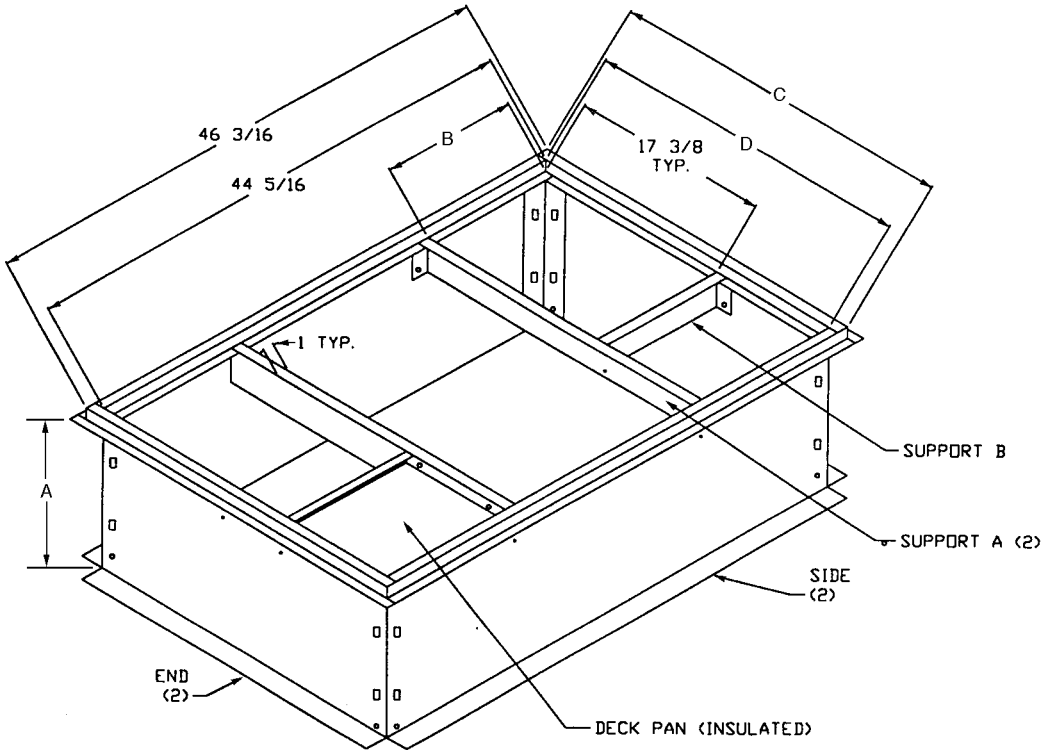
UNIT	ELECTRICAL CHARACTERISTICS	UNIT WEIGHT		UNIT HEIGHT in. [mm] "A"	CENTER OF GRAVITY in. [mm]		
		lb	kg		X	Y	Z
50JZ042	208/230-1-60, 208/230-3-60, 460-3-60	350	158.8	40.98 [1040.9]	21.0 [533.4]	20.5 [520.7]	16.6 [421.6]
50JZ048	208-230-1-60, 208/230-3/60, 460-3-60	355	161.0	40.98 [1040.9]	20.0 [508.0]	21.3 [539.8]	18.0 [457.2]
50JZ060	208/230-1-60, 208/230-3-60, 460-3-60	428	194.1	42.98 [1091.7]	21.0 [533.4]	20.0 [508.0]	17.6 [447.0]

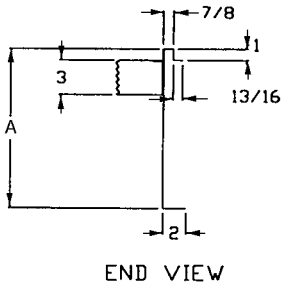
50JZ 042-060 Dimensions

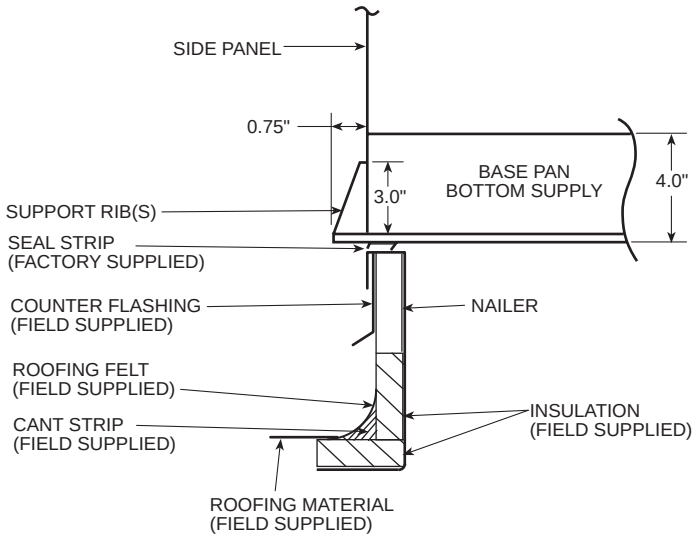
Accessory dimensions

	UNIT SIZE	ODS CATALOG ORDERING NO.	A in. [mm]	B in. [mm]	C in. [mm]	D in. [mm]
FLAT CURB	50JZ024-036	CPRFCURB006A00	8 [203]	11-27/32 [301]	30-5/8 [778]	28-3/4 [730]
		CPRFCURB007A00	14 [356]	11-27/32 [301]	30-5/8 [778]	28-3/4 [730]
	50JZ042-060	CPRFCURB008A00	8 [203]	15-27/32 [402]	42-1/8 [1070]	40-1/4 [1022]
		CPRFCURB009A00	14 [356]	15-27/32 [402]	42-1/8 [1070]	40-1/4 [1022]

NOTES:
1. Roof curb must be set up for unit being installed.
2. Seal strip must be applied as required to unit being installed.
3. Dimensions in [ ] are in millimeters.
4. Roof curb is made of 16 gage steel.
5. Table lists only the dimensions per part number that have changed.
6. Attach ductwork to curb (Flanges of duct rest on curb).
7. Insulated panels: 1-in. thick fiberglass 1 lb density.
8. Dimensions are in inches.







Full Perimeter Curb

Selection Procedure

I Determine cooling and heating requirements at design conditions:

Given:

Required Cooling Capacity (TC) . . . . . 33,500 Btuh
Sensible Heat Capacity (SHC) . . . . . 24,500 Btuh
Required Heating Capacity . . . . . 25,000 Btuh
Condenser Entering Air Temperature . . . . . 95°F
Indoor-Air Temperature . . . . . 80°F edb, 67°F ewb
Evaporator Air Quantity . . . . . .1200 cfm
External Static Pressure. . . . . 0.2 in. wg
Electrical Characteristics. 208-1-60

II Select unit based on required cooling capacity.

Enter Net Cooling Capacities table at condenser entering temperature of 95°F. The 50JZ036 unit at 1200 cfm and 67°F ewb (entering wet bulb) will provide a total capacity of 36,600 Btuh and a SHC of 28,200 Btuh. Calculate SHC correction, if required, using Note 4 under Cooling Capacities tables.

III Select electric heat.

Enter the 50JZ036 unit Heating Extended Performance table at 1200 cfm. At 70°F return indoor air and 20°F air entering outdoor coil, the integrated heating capacity is 17,400 Btuh. (Select integrated heating capacity value since deductions for outdoor-coil frost and defrosting have already been made. No correction is required.)

The required heating capacity is 25,000 Btuh. Therefore, 7,600 Btuh (25,000 – 17,400) additional electric heat is required

Determine additional electric heat capacity in kw.

$$\frac{7{,}600 \text{ Btuh}}{3414 \text{ Btuh/kW}} = 2.2 \text{ kw of heat required}$$

Enter the Electric Heater table on page 5 for 208/230 v, single-phase, unit. The 5-kw heater at 240v most closely satisfies the heating required. To calculate kw at 230v, multiply the heater kw by multiplication factor 0.92 found in the Multiplication Factors table on page 17.

5 kw x 0.92 = 4.6 kw

4.6 kw x 3414 Btuh/kw = 15,704 Btuh

Total unit heating capacity is 33,104 Btuh (17,400 + 15,704).

IV Determine fan speed and power requirements at design conditions.

Before entering the air delivery tables, calculate the total static pressure required. From the given, Filter Pressure Drop Table, Electrical Heat Pressure Drop table, and the Wet Coil Pressure Drop table, find:

External static pressure	0.200 in. wg
Filter	0.130 in. wg
Electric Heaters	0.000 in. wg
Total static pressure	0.330 in. wg

Enter the table for Wet Coil Air Delivery — Horizontal Discharge, 230 and 460v. At 0.33 in. wg external static pressure and medium speed, the motor delivers 1171 cfm, and 467 watts. Adjusting for 208v, the motor delivers 1054 cfm (deduct 10%) and 420 watts.

V Select unit that corresponds to power source available.

The Electrical Data table shows that the unit is designed to operate at 208-1-60.

Performance data

COOLING EXTENDED PERFORMANCE TABLE

50JZ024 COOLING PERFORMANCE TABLE

Temp (F) Outdoor Air Entering Condenser		Evaporator Air—CFM/BF											
		700/0.10				800/0.14				900/0.18			
		Evaporator Air — Ewb (F)											
		62	63*	67	72	62	63*	67	72	62	63*	67	72
75	TC	24.1	42.7	26.6	28.6	25.1	25.7	27.4	29.1	25.6	26.1	27.8	29.5
	SHC	21.3	17.6	18.2	14.6	23.2	18.9	19.4	15.2	24.5	19.9	20.3	15.7
	kW	1.86	1.86	1.87	1.89	1.87	1.87	1.88	1.89	1.87	1.87	1.88	1.90
85	TC	22.8	23.7	25.1	26.9	23.7	24.2	25.7	27.4	24.1	24.6	26.1	27.7
	SHC	20.6	17.2	17.4	13.9	22.3	18.1	18.5	14.4	23.4	19.1	19.3	14.9
	kW	2.05	2.06	2.06	2.08	2.06	2.06	2.06	2.08	2.06	2.06	2.07	2.09
95	TC	21.5	22.2	23.3	24.7	22.1	22.5	23.8	25.1	22.5	22.8	24.1	25.4
	SHC	19.9	16.5	16.4	12.8	21.2	17.3	17.3	13.3	22.1	18.1	18.0	13.7
	kW	2.26	2.26	2.27	2.29	2.26	2.27	2.28	2.29	2.27	2.27	2.28	2.30
105	TC	18.5	19.3	20.0	21.1	19.0	19.4	20.4	21.5	19.4	19.6	20.6	21.7
	SHC	17.6	14.8	14.4	11.1	18.7	15.4	15.1	11.6	19.3	16.0	15.7	11.9
	kW	2.54	2.53	2.55	2.57	2.55	2.53	2.56	2.58	2.55	2.54	2.56	2.58
115	TC	17.0	17.4	18.4	19.4	17.5	17.7	18.7	19.8	17.9	17.9	18.9	19.8
	SHC	16.6	13.9	13.6	10.4	17.5	14.5	14.3	10.8	17.9	15.1	14.8	11.0
	kW	2.80	2.80	2.81	2.82	2.80	2.81	2.82	2.80	2.81	2.81	2.82	2.82
125	TC	15.4	15.7	16.7	17.6	16.0	15.9	16.9	17.8	16.4	16.1	17.1	17.8
	SHC	15.3	13.0	12.8	9.6	16.0	13.7	13.5	9.9	16.4	14.3	14.0	10.1
	kW	3.09	3.11	3.10	3.11	3.06	3.12	3.13	3.14	3.10	3.12	3.13	3.14

HEATING EXTENDED PERFORMANCE TABLE -10–20

50JZ024

Return Air (F db)	CFM (Standard Air)		Air Temperature Entering Outdoor Coil (F db at 70% rh)									
			-10		0		10		17		20	
60	700	TC	7.1	6.5	9.5	8.7	12.0	10.9	14.0	12.7	14.9	13.4
		kW	1.53		1.61		1.69		1.76		1.79	
	800	TC	7.1	6.6	9.7	8.9	12.2	11.2	14.3	13.0	15.2	13.7
		kW	1.57		1.63		1.68		1.75		1.77	
	900	TC	7.3	6.7	9.8	9.1	12.4	11.4	14.4	13.2	15.5	14.0
		kW	1.59		1.64		1.69		1.74		1.76	
70	700	TC	6.2	5.7	8.8	8.0	11.3	10.4	13.3	12.1	14.3	12.9
		kW	1.72		1.79		1.87		1.93		1.95	
	800	TC	6.4	5.9	9.0	8.3	11.6	10.6	13.6	12.4	14.6	13.2
		kW	1.73		1.79		1.86		1.91		1.93	
	900	TC	6.6	6.1	9.2	8.4	11.8	10.9	13.9	12.6	14.9	13.4
		kW	1.75		1.80		1.86		1.90		1.92	
80	700	TC	5.5	5.1	8.0	7.4	10.5	9.7	12.6	11.5	13.5	12.2
		kW	1.86		1.96		2.05		2.13		2.16	
	800	TC	5.6	5.2	8.2	7.5	10.9	9.9	12.9	11.8	13.9	12.5
		kW	1.90		1.97		2.04		2.11		2.12	
	900	TC	5.8	5.3	8.4	7.7	11.0	10.1	13.2	12.0	14.2	12.8
		kW	1.91		1.98		2.04		2.10		2.11	

HEATING EXTENDED PERFORMANCE TABLE 30–60

50JZ024

Return Air (F db)	CFM (Standard Air)		Air Temperature Entering Outdoor Coil (F db at 70% rh)									
			30		40		47		50		60	
60	700	TC	18.1	15.8	21.7	21.7	24.4	24.4	25.3	25.3	27.9	27.9
		kW	1.90		1.99		2.09		2.12		2.22	
	800	TC	18.5	16.2	22.1	22.1	24.7	24.7	25.3	25.3	28.1	28.1
		kW	1.86		1.94		2.04		2.05		2.14	
	900	TC	18.9	16.6	22.4	22.4	25.0	25.0	25.5	25.5	28.3	28.3
		kW	1.82		1.92		2.01		2.01		2.11	
70	700	TC	17.6	15.4	21.1	21.1	23.9	23.9	24.8	24.8	27.7	27.7
		kW	2.03		2.16		2.29		2.34		2.47	
	800	TC	17.9	15.7	21.4	21.4	24.4	24.4	25.2	25.2	28.6	28.6
		kW	2.00		2.13		2.24		2.28		2.42	
	900	TC	18.3	16.0	21.8	21.8	24.7	24.7	25.5	25.5	28.9	28.9
		kW	1.98		2.10		2.22		2.24		2.36	
80	700	TC	16.7	14.7	20.5	20.5	23.3	23.3	24.1	24.1	27.8	27.8
		kW	2.27		2.37		2.51		2.56		2.76	
	800	TC	17.4	15.2	20.8	20.8	23.7	23.7	24.6	24.6	28.5	28.5
		kW	2.17		2.31		2.46		2.50		2.70	
	900	TC	17.6	15.5	21.2	21.2	24.1	24.1	24.9	24.9	28.7	28.7
		kW	2.15		2.28		2.42		2.47		2.62	

*At 75°F entering dry bulb—Tennessee Valley Authority [TVA] rating conditions; all others at 80°F entering dry bulb.

See Legend and Notes on page 17.

Performance data (cont)

COOLING EXTENDED PERFORMANCE TABLE

50JZ030 COOLING PERFORMANCE TABLE

Temp (F) Outdoor Air Entering Condenser		Evaporator Air—CFM/BF											
		875/0.08				1000/0.09				1125/0.10			
		Evaporator Air — Ewb (F)											
		62	63*	67	72	62	63*	67	72	62	63*	67	72
75	TC	28.1	28.5	30.8	33.2	29.1	29.5	31.8	33.7	30.5	30.5	32.8	34.5
	SHC	26.0	21.2	21.8	17.4	28.2	22.8	23.3	18.0	30.5	25.3	25.3	18.9
	kW	2.17	2.25	2.19	2.21	2.18	2.26	2.20	2.21	2.19	2.26	2.20	2.22
85	TC	26.3	26.8	29.6	32.1	27.0	27.7	30.5	32.8	29.4	29.0	31.4	33.4
	SHC	24.7	20.4	21.5	17.1	26.6	22.0	23.1	17.9	29.4	25.1	25.3	18.8
	kW	2.39	2.49	2.44	2.45	2.38	2.50	2.44	2.45	2.43	2.52	2.44	2.46
95	TC	24.9	25.4	27.9	30.9	25.7	25.9	28.9	31.5	28.3	27.0	29.8	32.1
	SHC	23.7	19.6	21.0	16.7	25.7	21.1	22.7	17.5	28.3	24.2	25.4	18.6
	kW	2.65	2.75	2.69	2.71	2.67	2.76	2.71	2.71	2.71	2.78	2.70	2.72
105	TC	23.4	22.2	26.1	29.2	24.3	23.1	26.9	29.8	26.5	25.0	27.9	30.5
	SHC	22.5	17.2	20.2	16.2	24.3	19.0	21.9	17.1	26.5	22.8	24.7	18.4
	kW	2.92	2.99	2.98	2.99	2.94	3.02	2.99	3.00	2.98	3.06	2.99	3.00
115	TC	21.7	19.0	24.2	27.4	22.9	20.3	24.9	27.8	24.7	22.9	25.8	28.5
	SHC	21.4	14.7	19.4	15.5	22.9	16.8	21.0	16.4	24.7	21.8	23.8	17.9
	kW	3.24	3.23	3.28	3.28	3.25	3.27	3.29	3.30	3.29	3.37	3.30	3.30
125	TC	19.9	19.3	22.1	25.1	21.3	19.9	22.6	25.5	22.9	21.0	23.5	26.1
	SHC	19.9	17.4	18.1	14.6	21.3	18.5	19.8	15.6	22.9	21.0	22.7	17.1
	kW	3.57	3.65	3.60	3.62	3.58	3.67	3.61	3.62	3.62	3.71	3.62	3.62

HEATING EXTENDED PERFORMANCE TABLE -10–20

50JZ030

Return Air (F db)	CFM (Standard Air)		Air Temperature Entering Outdoor Coil (F db at 70% rh)									
			-10		0		10		17		20	
60	875	TC	7.7	6.5	10.8	9.2	14.0	12.9	16.6	15.2	17.9	16.1
		kW	1.93		2.00		2.08		2.08		2.11	
	1000	TC	7.8	6.6	11.0	9.3	14.2	13.0	16.8	15.3	18.0	16.2
		kW	1.90		1.97		2.04		2.04		2.07	
	1125	TC	7.8	6.6	11.0	9.4	14.3	13.1	16.9	15.4	18.1	16.3
		kW	1.89		1.94		2.00		2.00		2.03	
70	875	TC	6.9	5.9	10.1	8.6	13.3	12.2	15.8	14.4	17.0	15.4
		kW	2.11		2.20		2.29		2.35		2.37	
	1000	TC	7.2	6.1	10.3	8.8	13.5	12.4	16.1	14.7	17.3	15.6
		kW	1.98		2.11		2.24		2.24		2.27	
	1125	TC	7.1	6.0	10.3	8.8	13.6	12.5	16.2	14.8	17.4	15.7
		kW	2.09		2.15		2.21		2.20		2.23	
80	875	TC	6.1	5.1	9.3	7.9	12.5	11.5	15.0	13.7	16.2	14.6
		kW	2.30		2.40		2.51		2.59		2.60	
	1000	TC	6.1	5.2	9.4	8.0	12.7	11.6	15.2	13.9	16.4	14.8
		kW	2.28		2.37		2.46		2.53		2.54	
	1125	TC	6.2	5.3	9.5	8.1	12.8	11.8	15.5	14.1	16.7	15.0
		kW	2.28		2.35		2.43		2.42		2.45	

HEATING EXTENDED PERFORMANCE TABLE 30–60

50JZ030

Return Air (F db)	CFM (Standard Air)		Air Temperature Entering Outdoor Coil (F db at 70% rh)									
			30		40		47		50		60	
60	875	TC	22.0	19.2	26.3	26.3	29.7	29.7	30.7	30.7	35.0	35.0
		kW	2.22		2.35		2.46		2.48		2.61	
	1000	TC	22.1	19.4	26.5	26.5	29.7	29.7	30.8	30.8	35.2	35.2
		kW	2.16		2.28		2.36		2.39		2.51	
	1125	TC	22.2	19.5	26.6	26.6	29.8	29.8	30.9	30.9	35.2	35.2
		kW	2.12		2.22		2.30		2.32		2.43	
70	875	TC	21.1	18.5	25.7	25.7	29.0	29.0	30.4	30.4	34.7	34.7
		kW	2.43		2.58		2.70		2.76		2.88	
	1000	TC	21.3	18.7	25.9	25.9	29.3	29.3	30.6	30.6	35.1	35.1
		kW	2.37		2.50		2.62		2.66		2.78	
	1125	TC	21.4	18.8	26.0	26.0	29.5	29.5	30.8	30.8	35.2	35.2
		kW	2.32		2.44		2.55		2.58		2.70	
80	875	TC	20.4	17.9	25.0	25.0	28.2	28.2	29.7	29.7	34.5	34.5
		kW	2.65		2.82		2.95		3.02		3.23	
	1000	TC	20.6	18.0	25.3	25.3	28.5	28.5	29.9	29.9	34.7	34.7
		kW	2.59		2.74		2.86		2.92		3.09	
	1125	TC	20.7	18.2	25.4	25.4	28.8	28.8	30.2	30.2	34.9	34.9
		kW	2.54		2.67		2.79		2.84		2.99	

*At 75°F entering dry bulb—Tennessee Valley Authority [TVA] rating conditions; all others at 80°F entering dry bulb.

See Legend and Notes on page 17.

Performance data (cont)

COOLING EXTENDED PERFORMANCE TABLE

50JZ036 COOLING PERFORMANCE TABLE

Temp (F) Outdoor Air Entering Condenser		Evaporator Air—CFM/BF											
		1050/0.07				1200/0.08				1350/0.10			
		Evaporator Air — Ewb (F)											
		62	63*	67	72	62	63*	67	72	62	63*	67	72
75	TC	35.9	36.2	39.8	42.4	37.0	37.1	40.5	42.8	37.6	37.2	40.5	42.8
	SHC	32.7	26.5	27.7	22.2	35.2	28.1	29.0	22.9	36.7	29.1	29.8	23.2
	kW	2.66	2.76	2.70	2.70	2.76	2.87	2.80	2.81	2.87	3.03	2.96	2.96
85	TC	33.9	34.0	38.0	41.4	35.0	34.8	38.9	41.9	35.9	35.0	39.0	41.9
	SHC	31.9	25.5	27.3	22.0	34.4	27.2	28.9	22.7	35.6	28.4	29.9	23.1
	kW	2.91	3.04	2.98	2.98	3.01	3.17	3.09	3.09	3.11	3.32	3.25	3.25
95	TC	31.7	31.6	36.1	39.8	32.7	32.3	36.6	40.3	33.9	32.5	36.8	40.3
	SHC	30.5	24.3	26.6	21.4	32.7	25.9	28.2	22.3	33.9	27.1	29.4	22.8
	kW	3.16	3.32	3.31	3.29	3.25	3.45	3.40	3.40	3.39	3.60	3.55	3.56
105	TC	28.5	28.0	32.0	36.1	29.7	28.7	32.7	36.6	30.6	28.8	32.9	36.6
	SHC	27.9	22.3	24.3	19.8	29.7	23.8	26.1	20.8	30.6	25.0	27.4	21.3
	kW	3.52	3.69	3.67	3.70	3.62	3.82	3.81	3.81	3.78	3.97	3.95	3.97
115	TC	26.1	25.4	29.0	33.5	27.5	25.9	29.6	33.8	28.3	26.0	29.8	33.7
	SHC	26.0	21.1	22.9	18.8	27.5	22.5	24.5	19.7	28.3	23.6	25.9	20.3
	kW	3.85	4.00	4.01	4.05	3.96	4.15	4.13	4.18	4.11	4.28	4.29	4.33
125	TC	23.9	22.2	26.0	29.9	25.2	22.6	26.5	30.4	25.8	23.0	26.6	30.3
	SHC	23.9	19.5	21.5	17.4	25.2	20.9	23.1	18.4	25.8	21.9	24.2	19.1
	kW	4.26	4.41	4.40	4.48	4.38	4.51	4.52	4.60	4.54	4.64	4.66	4.76

HEATING EXTENDED PERFORMANCE TABLE -10–20

50JZ036

Return Air (F db)	CFM (Standard Air)		Air Temperature Entering Outdoor Coil (F db at 70% rh)									
			-10		0		10		17		20	
60	1050	TC	7.2	6.1	11.2	9.5	15.3	14.0	18.4	16.7	19.9	18.0
		kW	2.43		2.47		2.51		2.54		2.56	
	1200	TC	7.4	6.3	11.5	9.8	15.6	14.3	18.7	17.0	20.2	18.2
		kW	2.47		2.50		2.53		2.55		2.57	
	1350	TC	7.6	6.5	11.7	10.0	15.8	14.5	19.0	17.3	20.6	18.5
		kW	2.51		2.53		2.56		2.57		2.60	
70	1050	TC	6.3	5.4	10.3	8.7	14.2	13.1	17.4	15.9	19.0	17.1
		kW	2.64		2.68		2.73		2.77		2.79	
	1200	TC	6.5	5.6	10.5	9.0	14.5	13.3	17.8	16.2	19.3	17.4
		kW	2.68		2.71		2.75		2.78		2.79	
	1350	TC	6.7	5.7	10.8	9.2	14.8	13.6	18.1	16.5	19.7	17.7
		kW	2.72		2.75		2.77		2.79		2.81	
80	1050	TC	5.2	4.4	9.2	7.8	13.2	12.1	16.3	14.8	17.8	16.1
		kW	2.86		2.91		2.97		3.01		3.03	
	1200	TC	5.4	4.6	9.5	8.0	13.5	12.4	16.7	15.2	18.2	16.4
		kW	2.90		2.94		2.98		3.02		3.03	
	1350	TC	5.6	4.8	9.7	8.2	13.8	12.6	17.0	15.5	18.6	16.7
		kW	2.94		2.98		3.01		3.03		3.05	

HEATING EXTENDED PERFORMANCE TABLE 30–60

50JZ036

Return Air (F db)	CFM (Standard Air)		Air Temperature Entering Outdoor Coil (F db at 70% rh)									
			30		40		47		50		60	
60	1050	TC	25.1	22.0	30.9	30.9	35.2	35.2	36.9	36.9	42.8	42.8
		kW	2.65		2.80		2.89		2.92		3.02	
	1200	TC	25.5	22.3	31.4	31.4	35.8	35.8	37.3	37.3	43.2	43.2
		kW	2.65		2.79		2.86		2.88		2.96	
	1350	TC	25.8	22.6	31.8	31.8	36.1	36.1	37.7	37.7	43.9	43.9
		kW	2.67		2.79		2.85		2.86		2.94	
70	1050	TC	24.1	21.1	30.1	30.1	34.6	34.6	36.3	36.3	42.7	42.7
		kW	2.85		3.00		3.16		3.21		3.34	
	1200	TC	24.5	21.5	30.6	30.6	35.2	35.2	36.9	36.9	43.2	43.2
		kW	2.85		2.99		3.13		3.17		3.27	
	1350	TC	24.9	21.8	31.0	31.0	35.7	35.7	37.4	37.4	43.6	43.6
		kW	2.86		3.00		3.12		3.14		3.23	
80	1050	TC	22.9	20.1	28.8	28.8	33.5	33.5	35.2	35.2	42.2	42.2
		kW	3.10		3.21		3.40		3.45		3.68	
	1200	TC	23.4	20.5	29.3	29.3	34.1	34.1	35.8	35.8	42.8	42.8
		kW	3.09		3.20		3.37		3.42		3.60	
	1350	TC	23.8	20.9	29.7	29.7	34.6	34.6	36.3	36.3	43.2	43.2
		kW	3.09		3.20		3.35		3.40		3.55	

*At 75°F entering dry bulb—Tennessee Valley Authority [TVA] rating conditions; all others at 80°F entering dry bulb.

See Legend and Notes on page 17.

Performance data (cont)

COOLING EXTENDED PERFORMANCE TABLE

50JZ042 COOLING PERFORMANCE TABLE

Temp (F) Outdoor Air Entering Condenser		Evaporator Air—CFM/BF								
		1225/0.11			1400/0.12			1575/0.14		
		Evaporator Air — Ewb (F)								
		62	67	72	62	67	72	62	67	72
75	TC	41.2	44.8	47.0	42.5	45.7	47.6	43.3	46.1	48.0
	SHC	37.4	31.4	24.8	40.2	33.3	25.8	42.2	34.6	26.5
	kW	3.08	3.10	3.11	3.09	3.11	3.12	3.10	3.11	3.13
85	TC	39.1	42.9	45.9	40.3	43.9	46.5	41.3	44.4	46.8
	SHC	36.3	30.8	24.3	39.1	32.8	25.3	40.8	34.1	26.1
	kW	3.39	3.42	3.44	3.41	3.42	3.44	3.42	3.46	3.45
95	TC	36.0	40.7	44.0	38.1	41.7	44.5	39.3	42.2	44.7
	SHC	34.4	29.8	23.6	38.1	31.8	24.6	39.3	33.5	25.5
	kW	3.68	3.76	3.81	3.75	3.76	3.82	3.76	3.76	3.81
105	TC	32.9	36.9	39.6	34.5	37.9	40.1	35.8	38.2	40.5
	SHC	31.9	27.8	21.6	34.5	29.9	22.7	35.8	31.3	23.5
	kW	4.16	4.21	4.22	4.20	4.20	4.23	4.20	4.20	4.23
115	TC	30.9	33.7	36.4	32.2	34.4	36.9	33.2	34.9	37.1
	SHC	30.4	26.2	20.3	32.2	28.1	21.3	33.2	29.6	22.1
	kW	4.59	4.61	4.62	4.62	4.61	4.63	4.61	4.60	4.63
125	TC	28.6	30.5	32.8	29.6	31.1	33.2	30.5	31.5	33.4
	SHC	28.2	24.7	18.8	29.6	26.5	19.7	30.5	27.9	20.4
	kW	5.07	5.07	5.08	5.08	5.06	5.09	5.07	5.06	5.09

HEATING EXTENDED PERFORMANCE TABLE -10–20

50JZ042

Return Air (F db)	CFM (Standard Air)		Air Temperature Entering Outdoor Coil (F db at 70% rh)									
			-10		0		10		17		20	
60	1225	TC	11.6	9.9	15.6	13.3	19.6	18.0	22.7	20.7	24.3	21.9
		kW	2.36		2.51		2.67		2.78		2.82	
	1400	TC	11.9	10.1	15.9	13.5	19.9	18.3	23.2	21.1	24.7	22.3
		kW	2.39		2.53		2.67		2.78		2.82	
	1575	TC	12.1	10.3	16.2	13.8	20.2	18.6	23.5	21.4	25.1	22.6
		kW	2.42		2.55		2.69		2.79		2.83	
70	1225	TC	10.9	9.3	14.9	12.7	18.9	17.4	22.0	20.1	23.6	21.3
		kW	2.59		2.77		2.94		3.06		3.11	
	1400	TC	11.2	9.6	15.3	13.0	19.3	17.7	22.4	20.4	24.0	21.6
		kW	2.62		2.78		2.94		3.05		3.10	
	1575	TC	11.5	9.8	15.5	13.2	19.6	18.0	22.7	20.7	24.3	21.9
		kW	2.65		2.80		2.95		3.06		3.10	
80	1225	TC	10.1	8.6	14.2	12.0	18.2	16.7	21.3	19.5	22.9	20.6
		kW	2.86		3.05		3.23		3.37		3.43	
	1400	TC	10.4	8.9	14.5	12.3	18.6	17.1	21.7	10.8	23.3	21.0
		kW	2.88		3.06		3.23		3.36		3.42	
	1575	TC	10.7	9.1	14.8	12.6	18.9	17.4	22.1	20.1	23.7	21.3
		kW	2.92		3.08		3.24		3.36		3.41	

HEATING EXTENDED PERFORMANCE TABLE 30–60

50JZ042

Return Air (F db)	CFM (Standard Air)		Air Temperature Entering Outdoor Coil (F db at 70% rh)									
			30		40		47		50		60	
60	1225	TC	29.5	25.9	35.4	35.4	40.3	40.3	41.9	41.9	48.0	48.0
		kW	2.97		3.16		3.32		3.38		3.60	
	1400	TC	30.0	26.3	35.9	35.9	40.7	40.7	42.4	42.4	48.6	48.6
		kW	2.95		3.14		3.29		3.34		3.53	
	1575	TC	30.3	26.6	36.3	36.3	40.8	40.8	42.3	42.3	48.3	48.3
		kW	2.95		3.12		3.26		3.31		3.48	
70	1225	TC	28.9	25.3	34.5	34.5	39.6	39.6	41.3	41.3	48.1	48.1
		kW	3.29		3.49		3.69		3.74		4.01	
	1400	TC	29.3	25.7	35.0	35.0	40.1	40.1	42.0	42.0	48.5	48.5
		kW	3.26		3.45		3.62		3.70		3.92	
	1575	TC	29.7	26.0	35.4	35.4	40.5	40.5	42.0	42.0	48.1	48.1
		kW	3.26		3.44		3.60		3.65		3.85	
80	1225	TC	27.9	24.5	33.8	33.8	38.6	38.6	40.3	40.3	47.5	47.5
		kW	3.63		3.87		4.06		4.13		4.45	
	1400	TC	28.5	24.9	34.2	34.2	39.2	39.2	40.9	40.9	47.7	47.7
		kW	3.61		3.82		4.00		4.06		4.33	
	1575	TC	29.0	25.4	34.6	34.6	39.6	39.6	41.3	41.3	47.7	47.7
		kW	3.59		3.79		3.96		4.02		4.26	

*At 75°F entering dry bulb—Tennessee Valley Authority [TVA] rating conditions; all others at 80°F entering dry bulb.

See Legend and Notes on page 17.

Performance data (cont)

COOLING EXTENDED PERFORMANCE TABLE

50JZ048 COOLING PERFORMANCE TABLE

Temp (F) Outdoor Air Entering Condenser		Evaporator Air—CFM/BF											
		1400/0.07				1600/0.08				1800/0.09			
		Evaporator Air — Ewb (F)											
		62	63*	67	72	62	63*	67	72	62	63*	67	72
75	TC	48.0	48.3	52.1	55.9	49.0	49.1	53.0	56.3	49.8	49.1	53.0	56.1
	SHC	44.5	35.8	37.5	29.3	47.5	37.8	39.3	30.4	49.1	39.4	40.8	31.0
	kW	3.50	3.70	3.58	3.62	3.64	3.89	3.76	3.79	3.81	4.13	4.00	4.02
85	TC	45.7	46.4	50.0	54.1	46.8	46.5	50.8	54.5	47.7	46.5	50.7	54.4
	SHC	43.3	35.0	36.3	28.8	46.3	36.6	38.5	29.9	47.4	38.2	40.2	30.7
	kW	3.86	4.07	3.97	4.00	3.99	4.30	4.15	4.17	4.17	4.53	4.39	4.41
95	TC	43.5	40.9	47.4	51.8	44.8	41.9	48.1	52.3	45.6	42.9	48.1	52.3
	SHC	41.9	30.4	35.1	28.0	44.8	33.0	37.3	29.1	45.6	35.7	39.0	30.0
	kW	4.25	4.26	4.40	4.43	4.41	4.57	4.57	4.60	4.59	4.88	4.80	4.84
105	TC	39.4	38.0	43.0	47.0	40.5	38.4	43.8	47.4	41.3	38.8	43.8	47.4
	SHC	38.3	29.5	32.8	25.9	40.5	31.1	35.1	27.0	41.3	33.5	36.6	27.9
	kW	4.72	5.02	4.93	4.97	4.89	5.17	5.10	5.15	5.11	5.45	5.33	5.39
115	TC	36.5	34.1	39.4	43.6	37.8	33.0	40.0	43.9	38.5	34.6	40.0	43.9
	SHC	36.5	27.2	31.0	24.5	37.8	27.3	33.1	25.6	28.5	30.7	34.7	26.5
	kW	5.25	5.48	5.42	5.47	5.39	5.57	5.60	5.64	5.62	5.87	5.83	5.85
125	TC	33.5	25.4	35.9	39.8	34.9	27.8	36.3	40.0	35.5	30.2	36.3	40.0
	SHC	33.5	19.8	29.4	23.0	34.9	23.5	31.4	24.2	35.5	27.8	32.9	25.0
	kW	5.80	5.69	6.00	6.04	5.98	6.03	6.18	6.22	6.20	6.37	6.38	6.47

HEATING EXTENDED PERFORMANCE TABLE -10–20

50JZ048

Return Air (F db)	CFM (Standard Air)		Air Temperature Entering Outdoor Coil (F db at 70% rh)									
			-10		0		10		17		20	
60	1400	TC	15.0	12.7	19.6	16.6	24.2	22.2	27.7	25.2	29.3	26.4
		kW	2.93		3.08		3.23		3.31		3.36	
	1600	TC	15.5	13.1	20.2	17.2	25.0	23.0	28.5	26.0	30.2	27.2
		kW	2.89		3.02		3.15		3.21		3.26	
	1800	TC	15.9	13.5	20.8	17.7	25.8	23.7	29.4	26.8	31.1	28.1
		kW	2.83		2.96		3.09		3.14		3.18	
70	1400	TC	12.5	10.6	17.6	15.0	22.8	20.9	26.2	23.8	27.7	25.0
		kW	3.20		3.35		3.49		3.61		3.66	
	1600	TC	13.7	11.6	18.5	15.8	23.4	21.5	27.1	24.7	28.8	25.9
		kW	3.13		3.29		3.44		3.51		3.56	
	1800	TC	14.0	11.9	19.1	16.3	24.2	22.2	27.9	25.5	29.7	26.8
		kW	3.11		3.23		3.34		3.43		3.47	
80	1400	TC	11.1	9.4	16.1	13.7	21.2	19.5	24.5	22.4	26.1	23.6
		kW	3.40		3.59		3.78		3.92		3.98	
	1600	TC	11.6	9.9	16.6	14.1	21.6	19.8	25.4	23.2	27.1	24.4
		kW	3.40		3.57		3.75		3.83		3.88	
	1800	TC	11.4	9.7	17.2	14.6	23.1	21.2	26.3	23.9	27.9	25.2
		kW	3.47		3.51		3.56		3.74		3.79	

HEATING EXTENDED PERFORMANCE TABLE 30–60

50JZ048

Return Air (F db)	CFM (Standard Air)		Air Temperature Entering Outdoor Coil (F db at 70% rh)									
			30		40		47		50		60	
60	1400	TC	34.6	30.3	39.7	39.7	43.5	43.5	44.6	44.6	48.0	48.0
		kW	3.53		3.68		3.77		3.81		3.94	
	1600	TC	35.7	31.3	41.0	41.0	44.7	44.7	45.6	45.6	49.0	49.0
		kW	3.41		3.54		3.62		3.65		3.76	
	1800	TC	36.8	32.3	42.2	42.2	45.8	45.8	46.5	46.5	50.5	50.5
		kW	3.31		3.43		3.50		3.53		3.64	
70	1400	TC	33.0	28.9	38.7	38.7	42.9	42.9	44.3	44.3	48.3	48.3
		kW	3.83		4.04		4.14		4.20		4.37	
	1600	TC	34.4	30.1	40.0	40.0	44.4	44.4	45.8	45.8	49.6	49.6
		kW	3.73		3.88		3.98		4.04		4.18	
	1800	TC	35.4	31.0	41.3	41.3	45.7	45.7	47.0	47.0	50.7	50.7
		kW	3.62		3.74		3.86		3.90		4.02	
80	1400	TC	31.4	27.5	37.2	37.2	41.7	41.7	43.2	43.2	48.1	48.1
		kW	4.18		4.40		4.54		4.61		4.81	
	1600	TC	32.5	28.5	38.6	38.6	43.2	43.2	44.6	44.6	49.5	49.5
		kW	4.05		4.22		4.38		4.43		4.61	
	1800	TC	33.6	29.4	39.9	39.9	44.6	44.6	46.0	46.0	50.6	50.6
		kW	3.94		4.08		4.23		4.28		4.43	

*At 75°F entering dry bulb—Tennessee Valley Authority [TVA] rating conditions; all others at 80°F entering dry bulb.

See Legend and Notes on page 17.

Performance data (cont)

COOLING EXTENDED PERFORMANCE TABLE

50JZ060 COOLING PERFORMANCE TABLE

Temp (F) Outdoor Air Entering Condenser		Evaporator Air—CFM/BF											
		1750/0.07				2000/0.08				2250/0.09			
		Evaporator Air — Ewb (F)											
		62	63*	67	72	62	63*	67	72	62	63*	67	72
75	TC	59.2	59.6	64.7	68.6	60.7	60.5	65.1	68.9	61.8	60.5	68.6	68.8
	SHC	54.7	43.8	46.1	36.2	58.6	46.2	48.2	37.3	60.8	48.3	50.1	38.1
	kW	4.55	4.75	4.62	4.67	4.72	4.98	4.85	4.89	4.94	5.25	5.14	5.17
85	TC	56.4	56.3	61.8	66.2	57.7	56.9	62.3	66.3	59.0	57.2	62.3	69.8
	SHC	53.6	42.4	44.8	35.4	57.3	44.6	47.3	36.6	58.9	46.7	49.4	37.4
	kW	4.97	5.21	5.08	5.12	5.11	5.45	5.31	5.33	5.35	5.70	5.59	5.61
95	TC	53.3	52.8	58.3	63.2	54.7	52.9	58.9	63.5	56.0	53.4	58.9	66.8
	SHC	52.3	40.7	43.2	34.3	54.7	42.7	46.0	35.6	56.0	45.0	48.2	36.6
	kW	5.41	5.72	5.57	5.60	5.49	5.98	5.79	5.83	5.78	6.21	6.04	6.10
105	TC	50.3	49.4	54.5	59.7	51.7	49.9	55.1	59.9	52.9	50.0	55.2	60.5
	SHC	50.3	39.1	41.6	33.0	51.7	41.6	44.3	34.3	52.9	43.6	46.5	35.4
	kW	5.90	6.24	6.10	6.13	6.24	6.46	6.31	6.35	6.42	6.72	6.56	6.62
115	TC	47.5	45.6	50.6	55.6	48.7	46.2	51.1	55.7	49.7	46.2	51.3	55.7
	SHC	47.5	37.4	40.0	31.6	48.7	39.9	42.6	32.8	49.7	42.0	45.2	33.9
	kW	6.47	6.80	6.65	6.69	7.00	7.02	6.84	6.90	7.08	7.27	7.07	7.17
125	TC	43.4	41.5	46.4	51.0	45.4	41.9	46.8	51.0	46.2	42.2	26.8	50.5
	SHC	41.5	35.7	38.3	29.9	45.4	38.0	40.8	31.1	46.2	40.1	43.1	32.1
	kW	7.18	7.34	7.22	7.27	7.25	7.63	7.43	7.48	7.51	7.83	7.65	7.75

HEATING EXTENDED PERFORMANCE TABLE -10–20

50JZ060

Return Air (F db)	CFM (Standard Air)		Air Temperature Entering Outdoor Coil (F db at 70% rh)									
			-10		0		10		17		20	
60	1750	TC	12.7	11.7	20.2	18.7	27.6	26.0	32.9	30.0	35.1	31.7
		kW	3.61		3.81		4.01		4.15		4.21	
	2000	TC	12.2	11.3	20.0	18.5	27.7	26.1	33.2	30.2	35.5	32.0
		kW	3.70		3.83		3.96		4.05		4.09	
	2250	TC	12.3	11.4	20.1	18.6	27.9	26.3	33.4	30.5	35.8	32.3
		kW	3.70		3.81		3.91		3.98		4.01	
70	1750	TC	11.4	10.5	18.8	17.4	26.2	24.6	31.3	28.6	33.5	30.2
		kW	4.06		4.23		4.40		4.52		4.57	
	2000	TC	11.5	10.6	19.0	17.6	26.5	24.9	31.7	28.9	33.9	30.6
		kW	4.04		4.18		4.32		4.43		4.47	
	2250	TC	11.6	10.7	19.1	17.7	26.7	25.2	32.0	29.2	34.3	30.9
		kW	4.07		4.18		4.28		4.35		4.38	
80	1750	TC	9.3	8.6	16.8	15.5	24.3	22.9	29.6	27.0	31.8	28.7
		kW	4.37		4.56		4.75		4.89		4.95	
	2000	TC	9.5	8.8	17.1	15.8	24.7	23.2	30.0	27.3	32.2	29.1
		kW	4.37		4.53		4.69		4.80		4.85	
	2250	TC	9.8	9.0	17.4	16.1	25.0	23.6	30.3	27.7	32.6	29.4
		kW	4.34		4.48		4.62		4.72		4.76	

HEATING EXTENDED PERFORMANCE TABLE 30–60

50JZ060

Return Air (F db)	CFM (Standard Air)		Air Temperature Entering Outdoor Coil (F db at 70% rh)									
			30		40		47		50		60	
60	1750	TC	42.6	37.3	50.5	50.5	55.9	55.9	58.5	58.5	64.4	64.4
		kW	4.40		4.55		4.68		4.68		4.81	
	2000	TC	43.3	37.9	51.0	51.0	57.4	57.4	58.9	58.9	64.1	64.1
		kW	4.22		4.40		4.48		4.51		4.59	
	2250	TC	43.6	38.2	51.4	51.4	57.2	57.2	59.2	59.2	65.4	65.4
		kW	4.12		4.28		4.34		4.38		4.48	
70	1750	TC	40.9	35.8	49.2	49.2	55.4	55.4	57.9	57.9	65.5	65.5
		kW	4.74		4.97		5.17		5.16		5.39	
	2000	TC	41.4	36.3	49.8	49.8	56.1	56.1	58.6	58.6	65.7	65.7
		kW	4.61		4.82		4.99		4.99		5.16	
	2250	TC	41.9	36.7	50.3	50.3	56.6	56.6	59.1	59.1	65.6	65.6
		kW	4.49		4.70		4.85		4.85		4.98	
80	1750	TC	39.3	34.5	47.2	47.2	54.0	54.0	56.5	56.5	65.2	65.2
		kW	5.14		5.39		5.67		5.69		5.99	
	2000	TC	39.8	34.9	47.8	47.8	55.0	55.0	57.2	57.2	65.3	65.3
		kW	5.01		5.24		5.41		5.49		5.71	
	2250	TC	40.2	35.3	48.3	48.3	55.4	55.4	57.7	57.7	66.6	66.6
		kW	4.91		5.11		5.28		5.34		5.58	

*At 75°F entering dry bulb—Tennessee Valley Authority [TVA] rating conditions; all others at 80°F entering dry bulb.

See Legend and Notes on page 17.

Performance data (cont)

ECONOMIZER 1-in. FILTER PRESSURE DROP (in. wg)

UNIT50JZ	PRESSURE DROP
024-036	0.20
042-060	0.25

MULTIPLICATION FACTORS

HEATER kw RATING	VOLTAGE DISTRIBUTION V/3/60	MULTIPLICATION FACTOR
240	200	.69
	208	.75
	230	.92
	240	1.00
480	440	.84
	460	.92
	480	1.00

Example: 15.0 kw (at 240v) heater on 208v
= 15.0 (.75 mult factor)
= 11.25 capacity at 208v

LEGEND

BF — Bypass Factor
Ewb — Entering Wet-Bulb
kW — Total Unit Power Input
SHC — Sensible Heat Capacity (1000 Btuh)
TC — Total Capacity (1000 Btuh) (net)
Edb — Entering Dry-Bulb
rh — Relative Humidity
▬ — Indicates Integrated Ratings

NOTES:
1. Ratings are net; they account for the effects of the evaporator-fan motor power and heat.
2. Direct interpolation is permissible. Do not extrapolate.
3. The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{sensible capacity (Btuh)}}{1.10 \times \text{cfm}}$$

t_{lwb} = Wet-bulb temperature corresponding to enthalpy of air leaving evaporator coil (h_{lwb})

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

Where: h_{ewb} = Enthalpy of air entering evaporator coil

4. The SHC is based on 80°F edb temperature of air entering evaporator coil. Below 80°F edb, subtract (corr factor x cfm) from SHC. Above 80°F edb, add (corr factor x cfm) to SHC. Correction Factor = 1.10 x (1 + BF) x (edb + 80).
5. Integrated capacity is maximum (instantaneous) capacity less the effect of frost on the outdoor coil and the heat required to defrost it.

ELECTRIC HEAT PRESSURE DROP TABLES

Small Cabinet: 024-036

STATIC	CFM											
	500	**600**	**700**	**800**	**900**	**1000**	**1100**	**1200**	**1300**	**1400**	**1500**	**1600**
5 Kw	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.06	0.07
10 Kw	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.06	0.07	0.09	0.10	0.11
15 Kw	0.00	0.00	0.00	0.02	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18
20 Kw	0.00	0.00	0.02	0.04	0.06	0.08	0.09	0.11	0.13	0.15	0.17	0.19

Large Cabinet: 042-060

STATIC	CFM														
	1100	**1200**	**1300**	**1400**	**1500**	**1600**	**1700**	**1800**	**1900**	**2000**	**2100**	**2200**	**2300**	**2400**	**2500**
5 Kw	0.00	0.00	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12
10 Kw	0.00	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13
15 Kw	0.00	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15
20 Kw	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.16

WET COIL DELIVERY—HORIZONTAL AND DOWNFLOW DISCHARGE UNIT 50JZ 024-060

230 AND 460 VOLT

Unit 50JZ	Motor Speed		External Static Pressure (in.wg)										
			0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
024	Low	Watts	275	273	271	270	—	—	—	—	—	—	—
		Cfm	923	844	754	669	—	—	—	—	—	—	—
	Med	Watts	—	—	—	359	353	350	347	341	—	—	—
		Cfm	—	—	—	941	876	814	737	622	—	—	—
	High	Watts	—	—	—	—	—	—	447	439	431	423	—
		Cfm	—	—	—	—	—	—	968	869	765	659	—
030	Low	Watts	276	276	272	—	—	—	—	—	—	—	—
		Cfm	963	929	781	—	—	—	—	—	—	—	—
	Med	Watts	375	377	371	362	354	350	—	—	—	—	—
		Cfm	1202	1170	1079	976	884	807	—	—	—	—	—
	High	Watts	—	—	—	—	469	449	435	428	—	—	—
		Cfm	—	—	—	—	1174	988	828	718	—	—	—
036	Low	Watts	462	451	431	411	394	381	—	—	—	—	—
		Cfm	1374	1290	1205	1116	1020	916	—	—	—	—	—
	Med	Watts	523	506	490	471	449	426	—	—	—	—	—
		Cfm	1500	1408	1301	1190	1082	977	—	—	—	—	—
	High	Watts	—	645	628	610	595	584	575	—	—	—	—
		Cfm	—	1474	1369	1267	1169	1069	962	—	—	—	—
042	Low	Watts	660	639	624	611	598	583	564	541	518	495	473
		Cfm	1701	1659	1618	1576	1531	1481	1425	1363	1293	1223	1154
	Med	Watts	—	—	—	—	—	704	675	645	614	582	550
		Cfm	—	—	—	—	—	1701	1631	1550	1460	1361	1256
	High	Watts	—	—	—	—	—	—	—	806	777	749	726
		Cfm	—	—	—	—	—	—	—	1708	1614	1521	1435
048	Low	Watts	620	600	586	574	562	548	530	510	487	—	—
		Cfm	1662	1621	1581	1540	1496	1447	1392	1331	1263	—	—
	Med	Watts	763	747	729	709	686	661	634	606	577	547	517
		Cfm	1917	1868	1822	1774	1722	1662	1594	1515	1427	1330	1227
	High	Watts	—	—	—	852	832	809	784	757	730	704	682
		Cfm	—	—	—	1982	1914	1839	1757	1669	1577	1486	1402
060	Low	Watts	597	592	578	526	460	452	445	—	—	—	—
		Cfm	2265	2190	2101	2033	1974	1869	1614	—	—	—	—
	Med	Watts	754	730	707	687	671	658	646	630	603	558	486
		Cfm	2383	2282	2202	2134	2070	2005	1935	1858	1771	1667	1576
	High	Watts	901	876	856	836	813	785	755	723	696	681	687
		Cfm	2480	2383	2301	2233	2175	2122	2066	1998	1910	1788	1619

*Air delivery values are based on operating voltage of 230 v or 460 v, wet coil, without filter or electric heater. Deduct filter and electric heater pressure drops to obtain static pressure available for ducting.

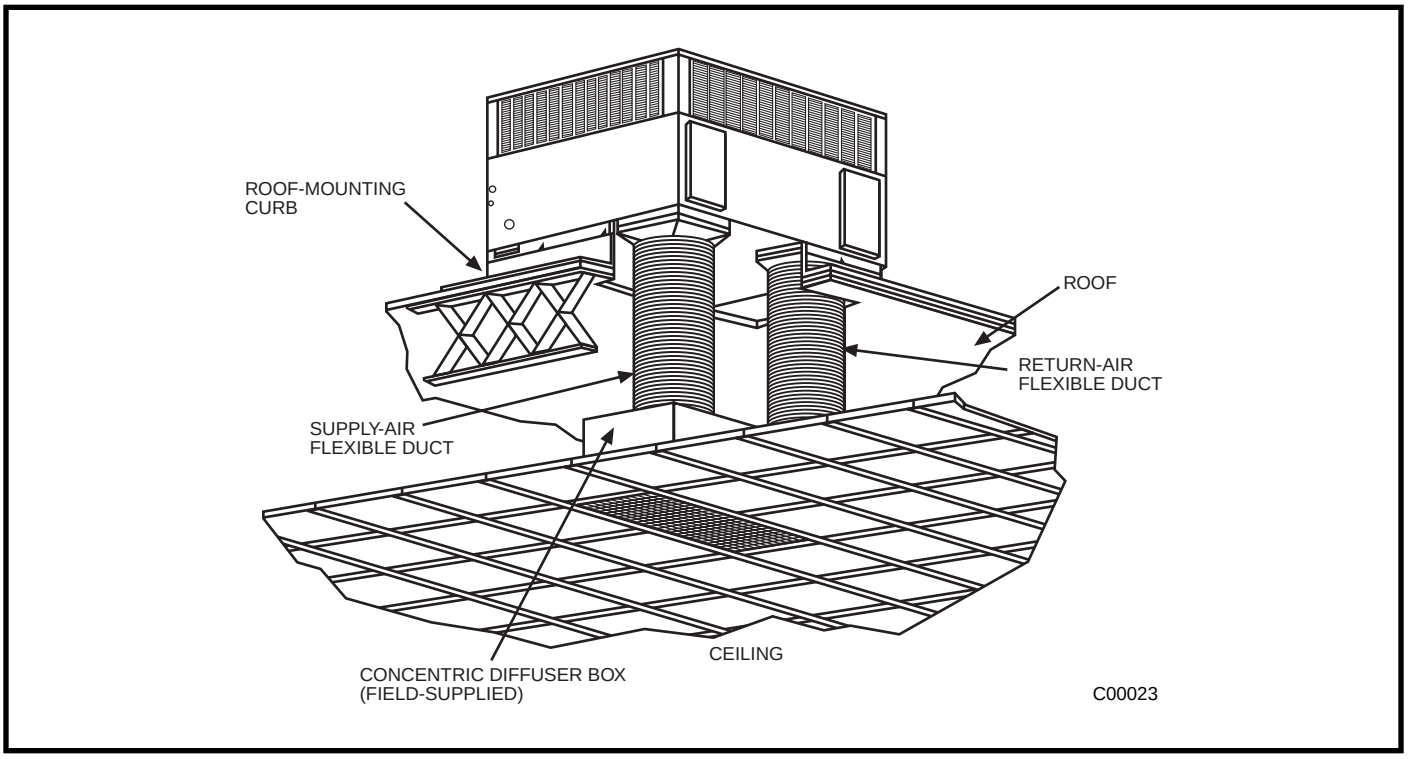
NOTES:

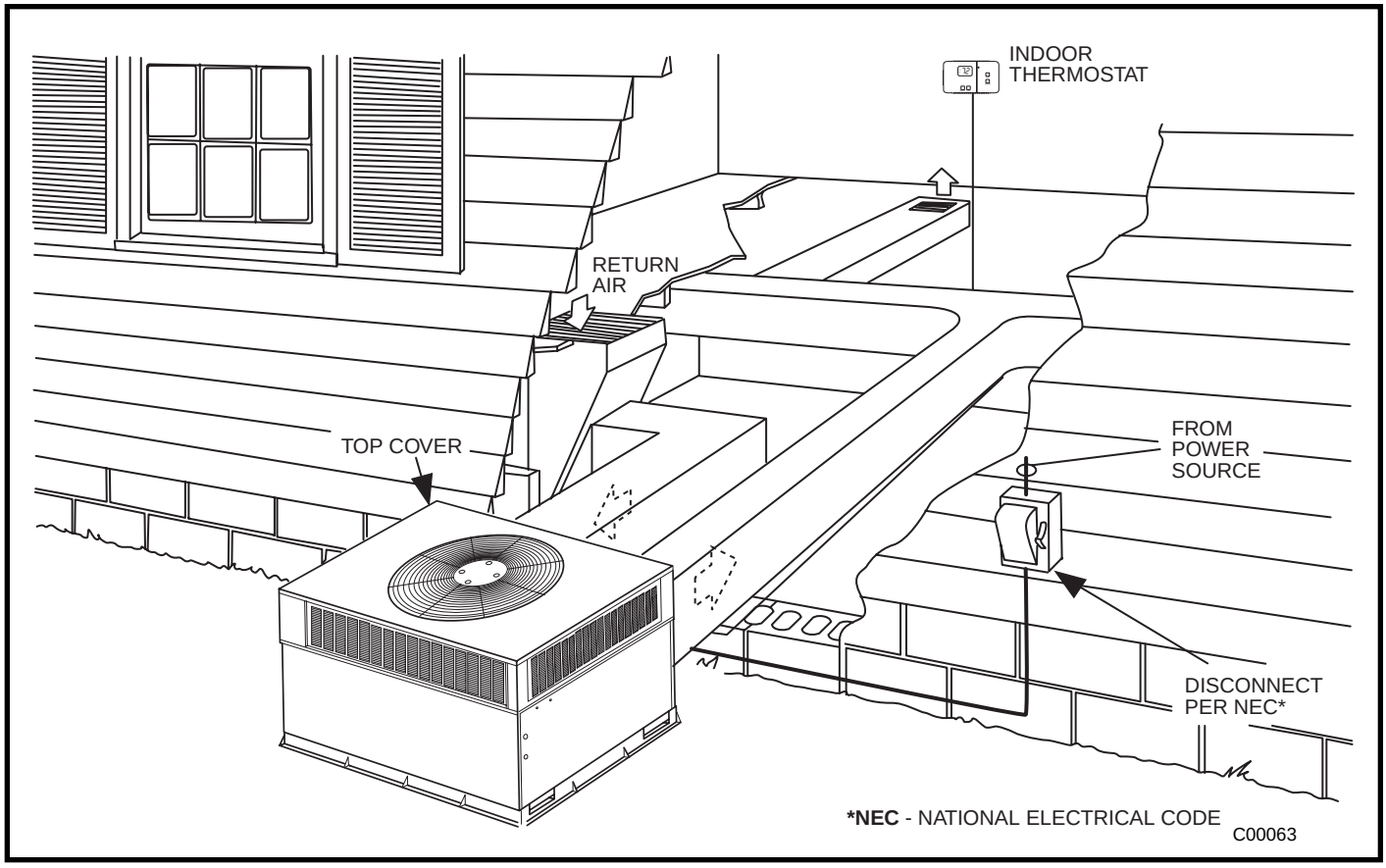
1. Do not operate the unit at a cooling ariflow that is less than 350 cfm for each 12,000 Btuh of rated cooling capacity. Evaporator coil frosting may occur at airflows below this point.
2. Dashes indicate portions of table that are beyond the blower motor capacity or are not recommended.
3. Deduct 10% for 208v.

FILTER PRESSURE DROP (In. wg)

UNIT SIZE 50JZ	FILTER SIZE	CFM																		
		500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
024, 030	20 X 20 X 1	0.05	0.07	0.08	0.10	0.12	0.13	0.14	0.15	—	—	—	—	—	—	—	—	—	—	—
36	20 X 24 X 1	—	—	—	—	0.09	0.10	0.11	0.13	0.14	0.15	0.16	—	—	—	—	—	—	—	—
042, 048, 060	24 X 30 X 1	—	—	—	—	—	—	—	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18

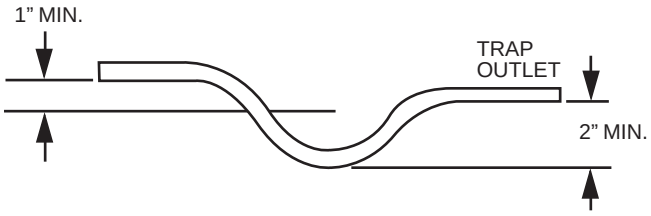
Typical piping and wiring





Application data

Condensate trap — A 2-in. condensate trap must be field supplied.



Ductwork — Secure downflow discharge ductwork to roof curb. For horizontal discharge applications, attach ductwork to unit with flanges.

To convert a unit to downflow discharge — Units are equipped with factory-installed inserts in the downflow openings. Remove the inserts similar to removing an electrical knock-out. Leave on duct covers to seal the horizontal discharge openings in the unit. Units installed in horizontal discharge orientation do not require duct covers.

Maximum cooling airflow — To minimize the possibility of condensate blow-off from the evaporator, airflow through the units should not exceed 450 cfm/ton.

Minimum cooling airflow — The minimum cooling airflow is 350 cfm/ton.

Minimum cooling ambient operating temperature — All standard units have a minimum ambient operating temperature of 40°F. With accessory low ambient temperature kit, units can operate at temperatures down to 0°F.

Maximum operating outdoor air temperature — Maximum outdoor operating air temperature for cooling is 125°F.

Electrical data

UNIT SIZE 50JZ	V-PH-Hz	VOLTAGE RANGE		COMPRESSOR		OUTDOOR FAN MOTOR	INDOOR FAN MOTOR	ELECTRIC HEAT		POWER SUPPLY†		
		Min	Max	RLA	LRA	FLA	FLA	Nominal kw	FLA	UNIT MCA	MAX FUSE or CKT. BKR.	MOCP
024	208/230-1-60	187	253	13.5	61.0	0.9	2.0	—/—	—/—	19.8/19.8	25/25	—
								3.8/5.0	18.1/20.8	25.1/28.5	25/30	—
								7.5/10.0	36.1/41.7	47.6/54.6	50/60	—
030	208/230-1-60	187	253	15.9	73.0	0.9	2.1	—/—	—/—	22.9/22.9	30/30	—
								3.8/5.0	18.1/20.8	25.2/28.7	30/30	—
								7.5/10.0	36.1/41.7	47.8/54.7	50/60	—
								11.3/15.0	54.2/62.5	70.3/80.8	—	80/90
	208/230-3-60	187	253	10.9	63.0	0.9	2.1	—/—	—/—	16.6/16.6	20/20	—
								3.8/5.0	10.4/12.0	16.6/17.7	20/20	—
								7.5/10.0	20.8/24.1	28.7/32.7	30/35	—
								11.3/15.0	31.3/36.1	41.7/47.7	45/50	—
036	208/230-1-60	187	253	16.9	83.0	1.6	4.1	—/—	—/—	26.8/26.8	35/35	—
								3.8/5.0	18.1/20.8	27.7/31.2	35/35	—
								7.5/10.0	36.1/41.7	50.3/57.2	60/60	—
								11.3/15.0	54.2/62.5	72.8/83.3	—	80/90
	208/230-3-60	187	253	12.2	77.0	1.6	4.1	—/—	—/—	21.0/21.0	25/25	—
								3.8/5.0	10.4/12.0	21.0/21.0	25/25	—
								7.5/10.0	20.8/24.1	31.2/35.2	35/40	—
								11.3/15.0	31.3/36.1	44.2/50.2	45/60	—
	460-3-60	414	506	5.8	35.0	0.9	2.0	—/—	—/—	10.2	15	—
								5.0	6.0	10.2	15	—
								10.0	12.0	17.5	20	—
								15.0	18.0	25.1	30	—
042	208/230-1-60	187	253	22.4	105.0	0.9	4.1	—/—	—/—	33.0/33.0	40/40	—
								3.8/5.0	18.1/20.8	33.0/33.0	40/40	—
								7.5/10.0	36.1/41.7	50.3/57.2	60/60	—
								11.3/15.0	54.2/62.5	72.8/83.3	—	80/90
								15.0/20.0	72.2/83.3	95.4/109.3	—	100/110
	208/230-3-60	187	253	15.4	88.0	0.9	4.1	—/—	—/—	24.3/24.3	30/30	—
								3.8/5.0	10.4/12.0	24.3/24.3	30/30	—
								7.5/10.0	20.8/24.1	31.2/35.2	35/40	—
								11.3/15.0	31.3/36.1	44.2/50.2	45/60	—
								15.0/20.0	41.6/48.0	57.1/65.1	—	60/70
	460-3-60	414	506	7.3	39.0	0.9	2.0	—/—	—/—	12.0	15	—
								5.0	6.0	12.0	15	—
								10.0	12.0	17.5	20	—
								15.0	18.0	25.1	30	—
								20.0	24.1	32.6	35	—
048	208/230-1-60	187	253	21.3	109.0	1.6	4.1	—/—	—/—	32.3/32.3	40/40	—
								3.8/5.0	18.1/20.8	32.3/32.3	40/40	—
								7.5/10.0	36.1/41.7	50.3/57.2	60/60	—
								11.3/15.0	54.2/62.5	72.8/83.3	—	90/90
								15.0/20.0	72.1/83.3	95.4/109.3	—	100/110
	208/230-3-60	187	253	14.7	91.0	1.6	4.1	—/—	—/—	24.1/24.1	30/30	—
								3.8/5.0	10.4/12.0	24.1/24.1	30/30	—
								7.5/10.0	20.8/24.1	31.2/35.2	35/40	—
								11.3/15.0	31.3/36.1	44.2/50.2	45/60	—
								15.0/20.0	41.6/48.0	57.1/65.1	—	60/70
	460-3-60	414	506	7.2	46.0	0.9	2.0	—/—	—/—	11.9	15	—
								5.0	6.0	11.9	15	—
								10.0	12.0	17.5	20	—
								15.0	18.0	25.1	30	—
								20.0	24.1	32.6	35	—
060	208/230-1-60	187	253	27.6	158.0	1.5	6.2	—/—	—/—	42.2/42.2	50/50	—
								3.8/5.0	18.1/20.8	42.2/42.2	50/50	—
								7.5/10.0	36.1/41.7	52.9/59.8	60/60	—
								11.3/15.0	54.2/62.5	75.4/85.9	—	90/90
								15.0/20.0	72.2/83.3	98.0/111.9	—	100/125
	208/230-3-60	187	253	19.2	137.0	1.5	6.2	—/—	—/—	31.7/31.7	40/40	—
								3.8/5.0	10.4/12.0	31.7/31.7	40/40	—
								7.5/10.0	20.8/24.1	33.8/37.8	40/40	—
								11.3/15.0	31.3/36.1	46.8/52.9	50/60	—
								15.0/20.0	41.6/48.0	59.7/67.7	—	60/70
	460-3-60	414	506	9.0	62.0	0.9	3.2	—/—	—/—	15.4	20	—
								5.0	6.0	15.4	20	—
								10.0	12.0	19.0	20	—
								15.0	18.0	26.6	30	—
								20.0	24.1	34.1	35	—

See Legend and Notes on p. 22

LEGEND

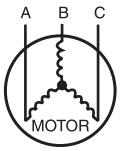
FLA	—	Full Load Amps
HACR	—	Heating, Air Conditioning and Refrigeration
IFM	—	Indoor-Fan Motor
LRA	—	Locked Rotor Amps
MCA	—	Minimum Circuit Amps
MOCP	—	Maximum Overcurrent Protection (fuses or HACR-type circuit breaker)
NEC	—	National Electrical Code
OFM	—	Outdoor-Fan Motor
RLA	—	Rated Load Amps
UL	—	Underwriters Laboratories

* Single-Point Wiring Connections.
† Dual-Point Wiring Connections.

NOTES:
1. In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. The UL, Canada, units may be fuse or circuit breaker.
2. Unbalanced 3-Phase supply Voltage
   Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percent of voltage imbalance.

$$\% \text{ Voltage imbalance} = 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

EXAMPLE: Supply voltage is 460-3-60.



AB = 452 v
BC = 464 v
AC = 455 v

$$\text{Average Voltage} = \frac{452 + 464 + 455}{3} = \frac{1371}{3} = 457$$

Determine maximum deviation from average voltage.
(AB) 457 - 452 = 5 v
(BC) 464 - 457 = 7 v
(AC) 457 - 455 = 2 v

Maximum deviation is 7 v.

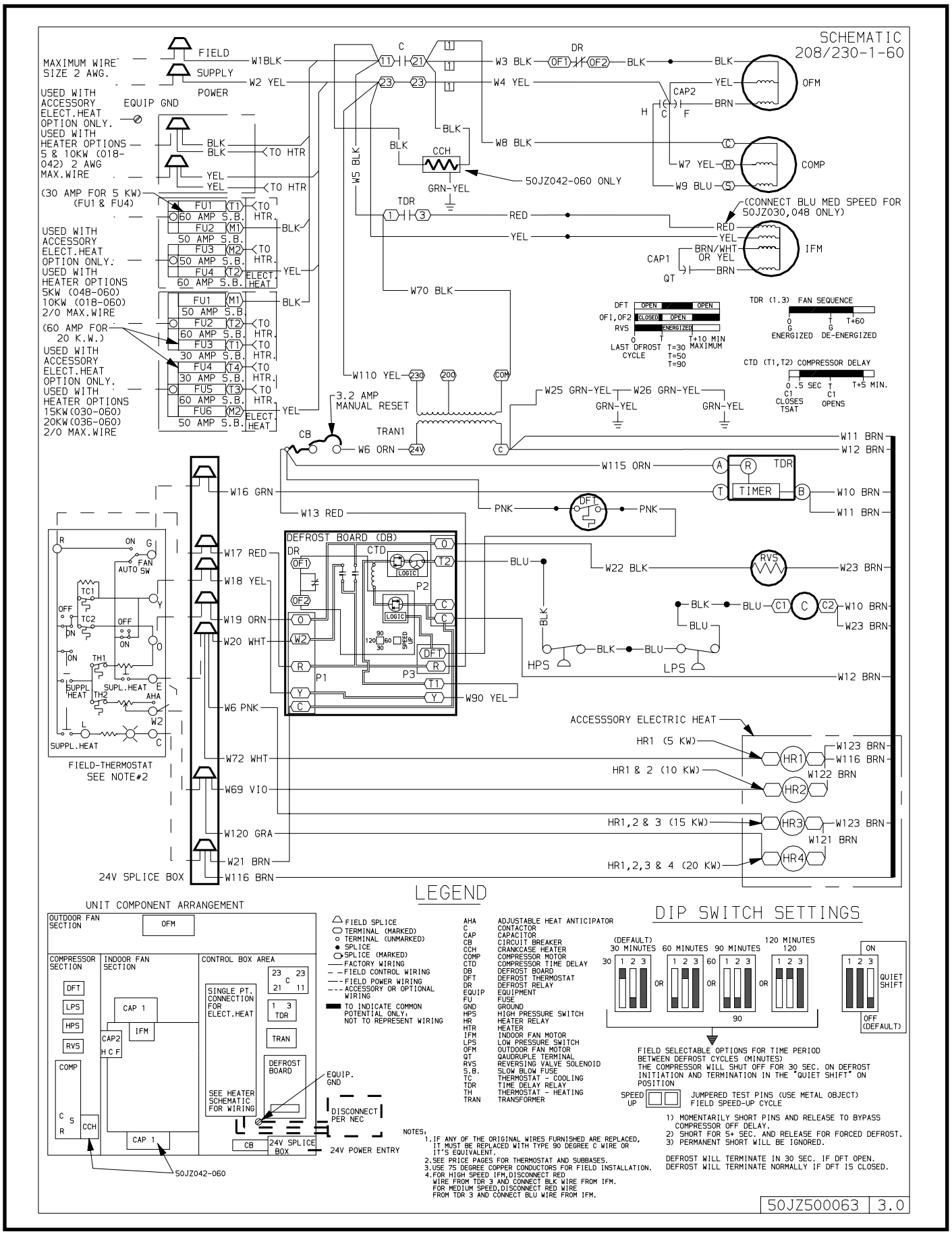
Determine percent of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{7}{457} = 1.53\%$$

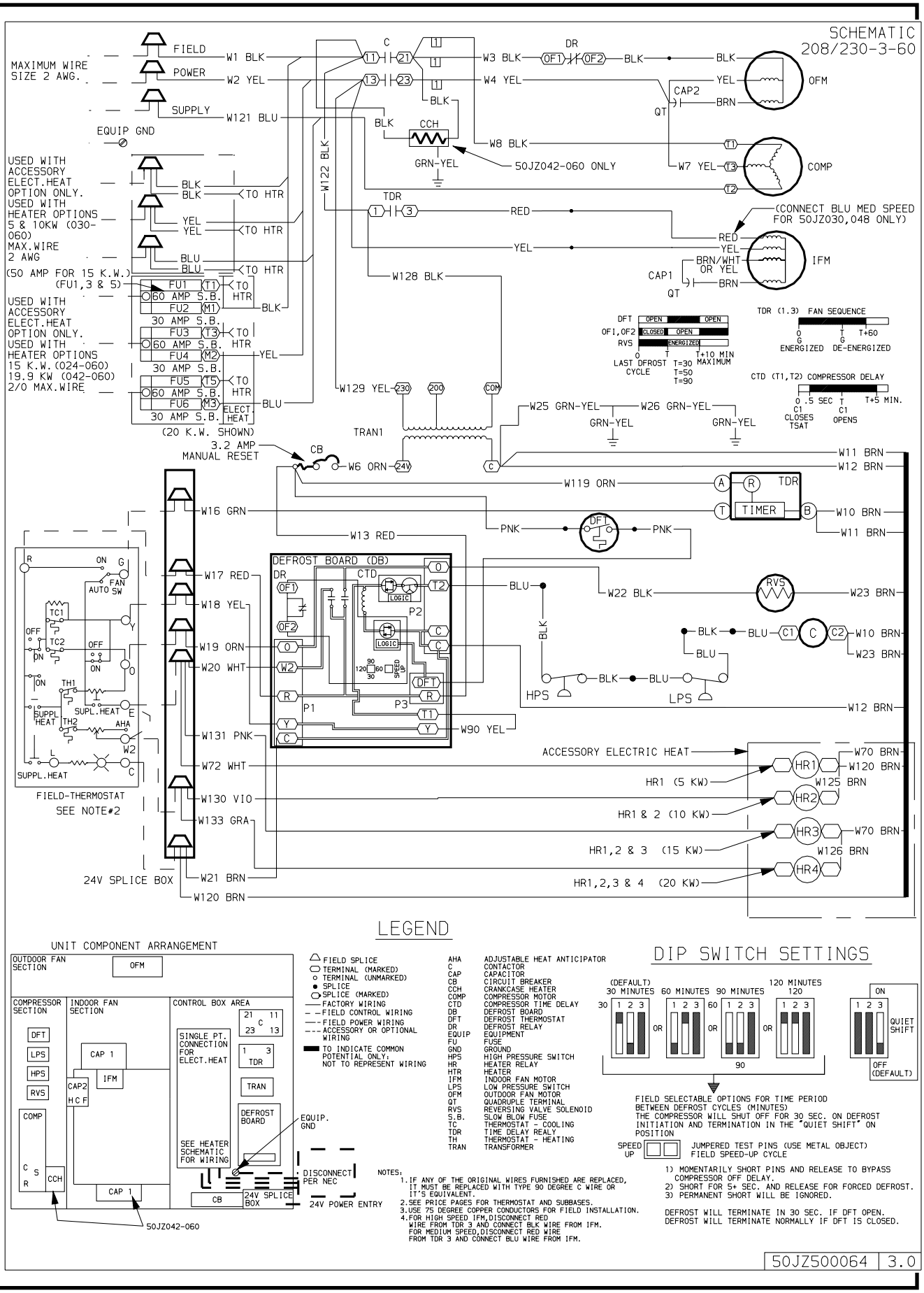
This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

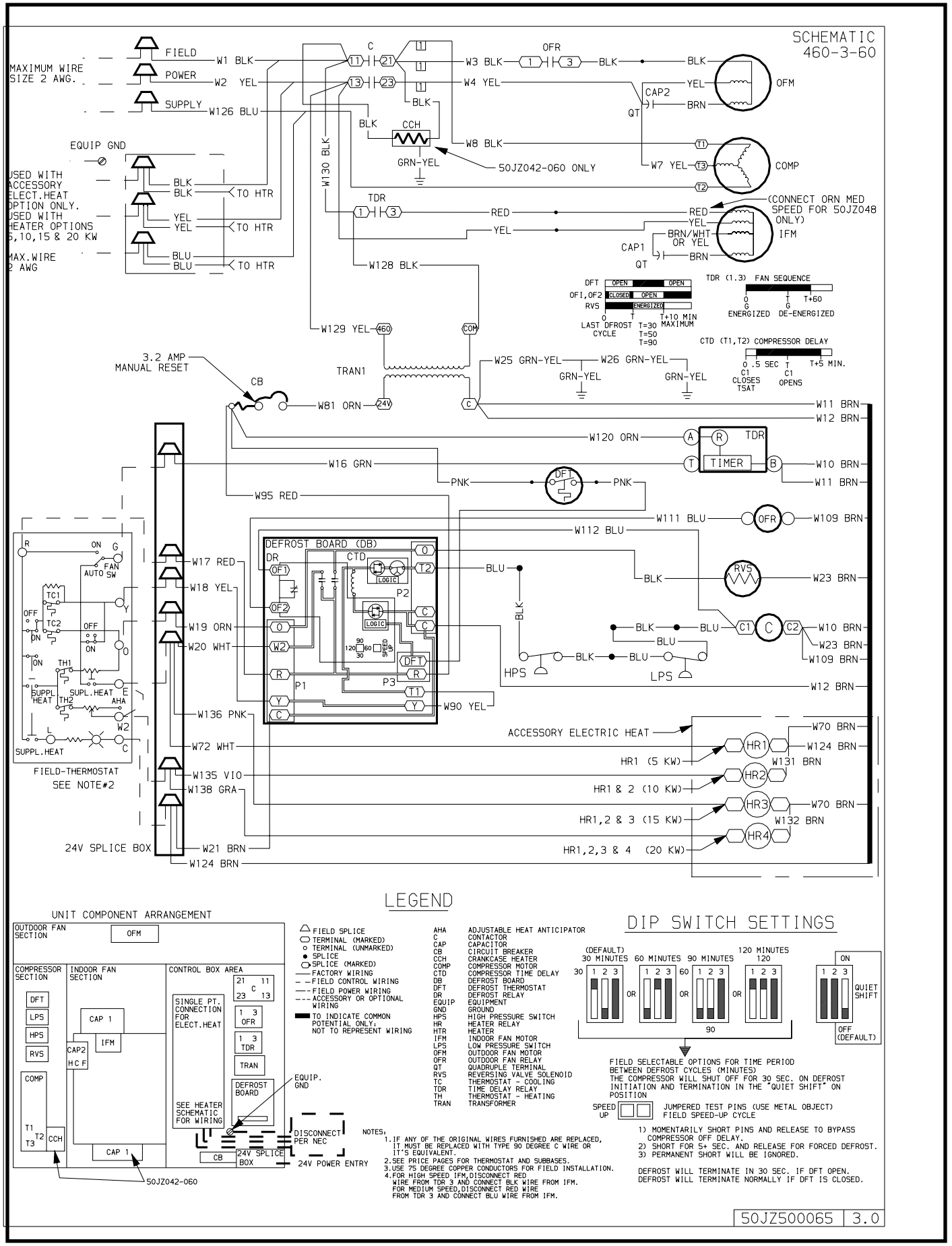
Typical wiring schematic — 208/230-1-60 shown



Typical wiring schematic — 208/230-3-60 shown



Typical wiring schematic — 460-3-60 shown



Controls

Sequence of operation

When power is supplied to unit, the transformer (TRAN) is energized.

On units with crankcase heater, heater is also energized.

Cooling — With the thermostat subbase in the cooling position, the thermostat makes circuit R-O. This energizes the reversing valve solenoid (RVS) and places the unit in standby condition for cooling.

As the space temperature rises, the thermostat makes, closing circuit R-Y. When compressor time delay (5±2 minutes) is completed, a circuit is made to contactor (C), starting the compressor (COMP) and outdoor-fan motor (OFM). Circuit R-G is made at the same time, energizing the indoor-fan relay (IFR) and starting the indoor-fan motor (IFM) after a 1-second delay.

When the thermostat is satisfied, contacts open, deenergizing C. The COMP and OFM stop, and the IFM stops after a 60 sec time delay.

Heating — On a call for heat, thermostat makes circuits R-Y and R-G.

When compressor time delay (5±2 minutes) is completed, a circuit is made to C, starting COMP and OFM. Circuit R-G also is completed, energizing IFR and starting IFM after a 1-sec delay.

Should room temperature continue to fall, circuit R-W is made through second-stage thermostat bulb. If optional electric heat package is used, a relay is energized, bringing on first bank of supplemental electric heat. When thermostat is satisfied, contacts open, deenergizing contactor and relay; motors and heaters deenergize. The IFM is controlled by a time-delay relay that keeps the fan on for 60 sec.

Defrost — Defrost board (DB) is a time and temperature control, which includes a field-selectable time period (Dip switch 1 and 2 on the board) between checks for defrost (30, 60, 90, or 120 minutes). Electronic timer and defrost cycle start only when contactor is energized and defrost thermostat (DFT) is closed.

The defrost board is also equipped with a 3rd dip switch for selecting Quiet Shift operation. The Quiet Shift operation turns compressor off at defrost initiation and termination.

Defrost mode is identical to cooling mode, except outdoor fan motor stops and a bank of optional electric heat turns on to warm air supplying the conditioned space.

Guide specifications

Packaged Heat Pump Units
Constant Volume Application

HVAC Guide Specifications
Size Range: **2 to 5 Tons, Nominal Cooling**
Carrier Model Number: **50JZ**

Part 1—General

SYSTEM DESCRIPTION

Outdoor rooftop or ground mounted, heat pump unit utilizing a hermetic compressor for heating and cooling duty and optional electric heating. Unit shall discharge supply air vertically or horizontally as shown on contract drawings. Outdoor fan/coil section shall have a draw-thru design with vertical discharge for minimum sound levels.

QUALITY ASSURANCE

A. Unit shall be rated in accordance with ARI Standards 210/240-94 and 270-95.
B. Unit shall be designed in accordance with UL Standard 1995.
C. Unit shall be manufactured in a facility registered to ISO 9001 manufacturing quality standard.
D. Unit shall be UL listed and c-UL certified as a total package for safety requirements.
E. Roof curb shall be designed to conform to NRCA Standards.
F. Insulation and adhesives shall meet NFPA 90A requirements for flame spread and smoke generation.
G. Cabinet insulation shall meet ASHRAE Standard 62P.

DELIVERY, STORAGE AND HANDLING

Unit shall be stored and handled per manufacturer's recommendations.

Part 2 — Products

EQUIPMENT

A. General:
Factory-assembled, single-piece, heat pump unit. Contained within the enclosure shall be all factory wiring, piping, controls, refrigerant charge (R-410A), and special features required prior to field start-up.
B. Unit Cabinet:
1. Unit cabinet shall be constructed of phosphated, zinc-coated, pre-painted steel capable of withstanding 500 hrs of salt spray.
2. Normal service shall be through a single removable cabinet panel.
3. The unit shall be constructed on a rust proof basepan that has an externally trapped, integrated sloped drain pan.
4. Indoor fan compartment top surface shall be insulated with a minimum 1/2-in. thick, flexible fiberglass insulation, coated on the air side and retained by adhesive and mechanical means. The indoor wall sections will be insulated with a minimum semi-rigid foil-faced board capable of being wiped clean. Aluminum foil-faced fiberglass insulation shall be used in the entire indoor air cavity section.
5. Unit shall have a field-supplied condensate trap.

C. Fans:
1. The indoor fan shall be 3-speed, direct-drive, as shown on equipment drawings.
2. Fan wheel shall be made from steel, and shall be double-inlet type with forward curved blades with corrosion resistant finish. Fan wheel shall be dynamically balanced.
3. Outdoor fan shall be direct drive propeller type with aluminum blades riveted to corrosion resistant steel spiders, be dynamically balanced, and discharge air vertically.

D. Compressor:
1. Fully hermetic compressors with factory-installed vibration isolation.
2. Scroll compressors shall be standard on all units.

E. Coils:
Indoor and outdoor coils shall have aluminum plate fins mechanically bonded to seamless copper tubes with all joints brazed. (Copper/copper and vinyl-coated construction available as option.) Tube sheet openings shall be belled to prevent tube wear.

F. Refrigerant Metering Device:
Refrigerant metering device shall be of the single body fixed orifice feed type.

G. Filters:
Filter section shall consist of field-installed, throwaway, 1-in. thick fiberglass filters of commercially available sizes.

H. Controls and Safeties:
1. Unit controls shall be complete with a self-contained low voltage control circuit.
2. Units shall incorporate an internal compressor protector that provides reset capability.
3. Unit shall provide High and Low/Loss-of-Charge Pressure Safety Protection.

I. Operating Characteristics:
1. Unit shall be capable of starting and running at 125°F ambient outdoor temperature, exceeding maximum load criteria of ARI Standard 240-94.
2. Compressor with standard controls shall be capable of operation down to 40° F ambient outdoor temperature in cooling and -10°F in heating.
3. Unit shall be provided with 30 or 60-sec fan time delay after the thermostat is satisfied.

J. Electrical Requirements:
All unit power wiring shall enter the unit cabinet at a single location.

K. Motors:
1. Compressor motors shall be of the refrigerant-cooled type with line-break thermal and current overload protection.

Guide specifications (cont)

2. All fan motors shall have permanently lubricated bearings, and inherent, automatic reset, thermal overload protection.
3. Outdoor fan motor shall be totally enclosed.

L. Grille

1. Louvered Grille:
   Louvered grille shall be standard on all units.

M. Special Features Available

1. Coil Options:
   Shall include factory-installed optional copper/copper and vinyl-coated refrigerant coils.
2. Economizer:
   a. Economizer controls capable of providing free cooling using outside air.
   b. Equipped with low leakage dampers not to exceed 3% leakage, at 1.0 in. wg pressure differential.
   c. Spring return motor shuts off outdoor damper on power failure.
3. Flat Roof Curb:
   Curbs shall have seal strip and a wood nailer for flashing and shall be installed per manufacturer's instructions.
4. Manual Outdoor Air Damper:
   Package shall consist of damper, birdscreen, and rainhood which can be preset to admit outdoor air for year-round ventilation.
5. Thermostat:
   To provide for one-stage heating and cooling in addition manual or automatic changeover and indoor fan control.
6. Low Ambient Package:
   Shall consist of a solid-state control and condenser coil temperature sensor for controlling condenser-fan motor operation, which shall allow unit to operate down to 0° F outdoor ambient temperature in cooling.
7. Filter Rack Kit:
   Shall provide filter mounting for downflow applications.
8. Square-To-Round Duct Transitions:
   Shall have the ability to convert the supply and return openings from rectangular to round. (024-048 only)
9. Compressor Protection:
   Solid-state control shall protect compressor by preventing "short cycling."
10. Crankcase Heater:
    Shall provide anti-floodback protection for low-load cooling applications. (Standard on 042-060 sizes)
11. Electric heaters:
    a. Electric heater shall be available as a field-installed option.
    b. Heater elements shall be open wire type, adequately supported and insulated with ceramic bushings.
    c. Electric heater packages must provide **single point** power connection capability.
12. Compressor Hard start kit:
    Shall be available to give a boost to the compressor motor at each start-up.